





Thomas Muir
 In Classe Anatomica
 Discipulus,
 INGENIO AC LABORE
 Insignis,
 PREMIUM HOCCE

Merito Consecutus Est.

Apud Coll. Glasg. }
 Imo die Martii. }

Jac^o Jeffray
 Professore.

— Sculp^t —



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THE
PRINCIPLES OF SURGERY,
AS THEY RELATE TO
WOUNDS, ULCERS, FISTULÆ, ANEURISMS,
WOUNDED ARTERIES,
FRACTURES OF THE LIMBS, TUMORS,
THE OPERATIONS OF TREPAN AND LITHOTOMY.
ALSO OF
THE DUTIES
OF THE
MILITARY AND HOSPITAL SURGEON.

BY JOHN BELL.

A NEW EDITION,
WITH
COMMENTARIES, AND A CRITICAL ENQUIRY INTO THE PRACTICE
OF SURGERY.

BY CHARLES BELL,
PROFESSOR OF ANATOMY AND SURGERY TO THE ROYAL COLLEGE OF SURGEONS IN
LONDON, SURGEON OF THE MIDDLESEX HOSPITAL, ETC.

IN FOUR VOLUMES.
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MILITARY AND HOSPITAL SURGEON.

BY JOHN REEL.



LONDON:

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LECTURES
ON THE
SURGERY OF TUMORS,
ADDRESSED TO MY LATE PUPILS.

DISCOURSE I.

ON THE EXCELLENCY AND IMPORTANCE OF THIS DEPARTMENT OF SURGERY.

“ Full gladly would he learn, and gladly teach.”

CHAUCER'S PRIEST'S TALE.

It is, I am persuaded, my first duty to display the importance of this department of our science, and to interest your sympathy and reason in behalf of those who are afflicted with tumors; of which, though some are harmless, far the greater number, by their cancerous or malignant nature, by oppressing the organs of breathing and swallowing, by destroying the bones or even affecting (when seated on the head or in the nostrils) the functions of the brain itself, bring the patient, and that too in the vigour and prime of life, to an untimely grave. In each subdivision of our subject I shall have occasion to lay before you examples of neglected and fatal tumors, of dismal scenes which the surgeon did not dare to prevent; of ope-

rations rashly begun, and abandoned in the very moment of execution; we need not seek for sad and persuasive examples of such danger to impress the importance of the subject upon our minds, nor strive to recollect minutely the long-continued sufferings of those who have died of tumors. In our streets and villages every passer-by is shocked with tumors exposed with little regard to delicacy, loathsome to the sight, and certainly fatal; and every surgeon must remember to have been engaged in melancholy and unavailing consultations. The scenes we have witnessed in hospitals, or in private practice, return to the imagination from time to time accompanied with all their tragical circumstances; we recollect the sufferings of our patients, and we also remember that the most loathsome, painful, and, in the end, fatal tumors, were once trivial; we also know that thousands at this present time are verging towards that hopeless desperate state from which even the most intrepid surgeon will not attempt their rescue at the peril of his reputation and eternal peace of mind.

In a country where scrophulous diseases prevail, no inquiry can be more important than that in which we are now engaged. Whatever diffidence I may entertain of my abilities to do justice to a subject, where neither reading nor reflection, nor any thing but experience can much avail, I feel none in calling your attention to this department of surgery as by far the most important, and in claiming your aid: for the purpose of this address is not to proclaim my own diligence, but to excite yours; and to represent the Surgery of Tumors as a subject of perpetual study to those engaged in practice. It is a department of the science which requires to be taught in the form of

particular lessons, practical not speculative ; founded on actual observation ; where cases of various complexions tend to illustrate every variety of danger. The operations of lithotomy, trepan, and amputation are easily performed, and are performed in one unvaried way : they are also, though requiring no uncommon skill, reserved for those who have attained to high professional fame. But tumors are the most frequent of all surgical diseases ; every surgeon must find this, the treatment of tumors, a part of his daily practice : a tumor, in whatever part of the body it is seated, requires an intimate acquaintance with the structure of that part, and a clear recollection of all the precedents or rules which may serve either to direct the judgment, or to guide the hand. The surgeon should know how to resolve a tumor, or to excite it to suppuration ; how to evacuate the matter, and obliterate the sac ; when to suffer the mild and harmless to grow, and how to extirpate at every risk that which is prone to ulceration or cancer. Every tumor is a subject of new and anxious consultation, and every operation of this irregular nature demands a knowledge of blood-vessels and nerves not easily remembered, and perhaps nowhere truly described.

Need I remind you what torture a skilful surgeon may prevent, what misfortunes ignorance may cause ? Every day we see the surgeon mistaking blood for matter,—flesh for bone, and tumors, malignant in their nature, for indolent and harmless swellings of the glands : by tormenting a simple tumor it may become malignant,—by neglecting a moveable tumor it may become fixed,—by allowing a small and seemingly harmless tumor to grow, it may wax to so great a size, and acquire such intimate connexions with the

more important vessels and nerves as to defy all kind of surgery. A tumor of the jaws, the throat, or the nostrils, of which the surgeon in its first beginning speaks too lightly, grows in process of time to such a size that it compresses the throat, fills the passages of the nostrils, and, by its growth and pressure, renders the bones carious, and affects the brain. And thus it comes to pass, that, when the patient returns after some months of absence to crave advice, and still more earnestly than at first to entreat for help, his approaching death is manifest and inevitable.

Be assured that the talents for this department of practice are not to be learned at colleges and schools: that the irregular parts of the science, and especially the right treatment of tumors, the distinguishing their character and natures, predicting their growth and consequences, or performing the operations which tumors, dangerous either by their place or nature, require, are to be the study of your life. Every day and every hour you should improve in this kind of knowledge, and should aspire at a degree of excellence not to be obtained from the lessons of any teacher, for, be assured, no master can fix the principles of science, nor anticipate the aspect and peculiar character of each case, and lessons of disappointment and scenes of distress in which you have had a personal responsibility make deep and lasting impressions. I solemnly call upon you for the exercise of that unwearied and constant diligence which you owe to a profession, which, in every important act, affects the life or happiness of a fellow-creature, and which is especially required in regard to those irregular parts of the science, which are so little imposing, and yet are the most important.

Let no fair occasion pass of inquiring into the history of monstrous growths, and speculating on those prodigies of nature, even when it is not in your power to cure or alleviate the disease ;—disregard no tumor because it seems harmless, for never is such a disease more dangerous than when the patient is dismissed with some trivial prescription, and referred with dark and doubtful prediction to “the coming on of time.” Allow no poor petitioner for your advice to depart without some share of notice, for the tumor which he hides under his side lock or cravat is, perhaps, at no distant period, to cause his death : never, unless for special reasons in consultation or otherwise assigned, suffer a tumor to grow uncontrolled, unless it be seated merely in the skin, or under the skin, for in every other part of the body it endangers life.

From those advices which I confidently lay before you, suffer me to decline into other reflections more personal to yourselves, and more connected with your reputation and interests. Unless you are careful in marking the characters of tumors, you will never improve in knowledge or conduct : so transient are the apprehensions the surgeon feels, when called from time to time to examine a trivial tumor, so deeply impressive the scene, when that once trivial tumor brings the patient into despair and danger, that no one is justified in neglecting this department of study, nor should his heart be at ease who fails, whatever the extent or hardships of his practice, to record for his own private instruction at least, if not for the general use, whatever remarkable instances he meets with of disappointment or success. A surgeon, though doomed to pass his life in the most desolate and dreary situation, whether among slaves in

our settlements abroad, or among peasants and country-people at home, cannot be without frequent occasions, if he know but how to use them wisely, of improving his own talents and instructing others; and in those who move in the higher and more distinguished ranks of our profession, it is becoming to reserve from its gainful occupations time to reflect upon its most essential duties, and to improve that science from which such distinction is derived. Be careful then in composing the memorials of your private practice; though they should not be destined ever to pass from your own repositories, they will not be without their use. The habit of writing and thinking; of taking yourself severely to account for whatever errors you commit, will improve your skill, and beget a just confidence in your own judgment.

The patient, in the last and fatal stage of a tumor, speaks of despair, but never feels it; still he looks to you for help, desires operations only when such resources can no longer be thought of, and struggles for life like a spent swimmer to the last moment. Thence it is the universal interest of the profession, that patients should have timely warning of their danger; that every individual who assumes the rank and name of surgeon should be qualified for every duty; that timely and successful operations should be more frequently known and rumoured abroad; for, in proportion as surgeons become more dexterous and skilful, the confidence of those afflicted with such diseases will increase.

Believe me, gentlemen, I use no art to engage you in this department of study, and do not seek by exaggeration to enhance its importance: what I think and feel, I must, in justice to you, speak freely, and

without restraint ; and surely no way can be so faultless as to lay before you a slight and preliminary sketch of the chief subjects of this volume, i. e. of the various parts subject to tumors, and the various consequences of their growth, as they affect the skin, the glands, the bones, the eye, the breast, the testicle, the throat, the rectum, or other hollow passages of the body, ruining, by pressure and ulceration, the structure of the affected and the adjacent parts. This general prognosis I am sure I shall effectually impress upon your memory, “ That every tumor is destined to grow more or less rapidly, till it destroy the adjacent bones, entangle the great vessels and nerves, compress the throat, and finally, by suffocation, ulceration, hemorrhagy, or hectic, bring the patient to his grave.” This we know but too surely, for an unnatural growth once formed, each arterial pulsation that administers nourishment to the natural body augments its growth.

The skin is the part of the body perhaps the most vascular and delicate, and is often by injuries, as by the pulling of the hair, or the pinching or bruising of its vessels, so excited, that its vessels, taking on a lively action, its arteries and veins are in process of time dilated, and form aneurisms, or bleeding tumors ; or they are merely by such excitement so quickened in their ordinary function of nutrition, that the whole web of integuments becomes a tumor, retains its natural form and substance, with only some slight enlargement of its pores and papillæ, but becomes so voluminous as to be wrapped round the body, forming thus the most extraordinary tumors, which are still nothing but skin.

The bones, vascular like the softer parts, and per-

haps more regularly and unceasingly absorbed and replaced, form, when they are injured, the most bulky, and, from their solid texture, the most permanent tumors, which, when they turn to ulceration and caries, are the most incurable and fatal. We very frequently observe a tumor of a bone to follow a blow, and, when the blow and the swelling take place near a joint, when the knee, the wrist, the shoulder, or the ankle are involved in the tumor, its growth is extremely rapid. Often I have seen the radius, when the wrist has been fractured and ill reunited, form an enormous bony tumor; or the heads of the tibia and fibula swell out in consequence of a bruise into a tumor cavernous and gristly, partly occupied with matter and partly formed of a solid increase of bone, till the thigh almost equalled the body in thickness. Very often such tumors bursting pour out the most foetid matter; and large bony cavities, or numerous honey-comb-like cells are formed. Often too without external violence, without any conspicuous marks of a scrophulous habit, without any possible relation to venereal diseases; the bones universally are disposed to form tumors, by which sometimes the hands are deformed, the wrists swelled, the fingers crooked like birds' talons, and sometimes the long bones, as the thigh-bones, shoulder-bones, ribs or scapulas, are studded with large knobs or grow out in tumors. These are diseases still more dismal, quite irremediable.

The glands, when their vessels are excited by blows, by cold, by the absorption of foul and virulent matter, are enlarged beyond all credible limits, and draw the adjacent parts into disease, insomuch that the tumor which originally was a simple gland has,

in the end, a very anomalous aspect, and conveys such confused impressions to the feel, that we know not how to pronounce upon its nature, which only the history of the tumor can in any degree elucidate. These are the tumors which, when seated either within the mouth, or at the angle of the jaws, repress the tongue, displace the trachea, or obstruct the free passage of the food and air, and connect themselves so with the branches of the carotid arteries, that the hand of the most intrepid surgeon can no longer avail, and wise and prudent men, met in consultation, shrink from those duties which the patient's manifest danger plainly imposes, lest they should bring not themselves only but their profession into disgrace.

The eye, a part at once exquisitely sensible, and exquisitely vascular, and consisting of humors which are perhaps more than any other parts of the body in a state of continual circulation, being continually secreted and reabsorbed, grows by the slightest excess of vascular action into a tumor. Sometimes the secretion of aqueous humor, not changed, but merely augmented, distends the globe of the eye into a tumor continually increasing, till first vision is deranged (not destroyed), next head-aches ensue, and, finally, the coats of the eye give way. On other occasions the adnata, or loose and vascular coat of the eye, arising from the inner surface of the eyelids and connecting it with the skin, is so swelled by inflammation, that its cellular substance being of a spongy nature, the tumor of it covers and involves the whole eye, conceals the eye-ball, protrudes far beyond the eyelids, red, fleshy-like, and often ulcerated, so as to seem in the hasty opinion of ignorant surgeons a cancer of the eye: even for such a disease, so little

connected with the globe of the eye, or allied with cancer, have I known the whole eye-ball extirpated. Sometimes the deeper parts of the eye are so inflamed as to terminate in suppuration of the globe, after delirium and dreadful pains; then the central parts having suppurated, the firm coats of the eye at last ulcerate, the globe bursts, the eye subsides into its socket, and the eyelids close upon what remains of its coats: but these, thickened by continual inflammation, harden and grow into a new and more formidable tumor; and the eye protrudes again from its socket, of a schirrous hardness, with a painful and burning ulceration. Sometimes from a suppuration less deep or extensive, where not the vitreous humor or whole body of the eye, but only the cornea and the iris, the most delicate and vascular part of the eye, are diseased, the eye becomes cancerous; for, after a partial suppuration and ulceration of the eye, the iris very often throws out a fungus, bearing the true character of cancer, even from the first, or it becomes so by the excoriation of the tears, and the friction of the eyelids. The lachrymal gland seated within the socket is often, as I shall have occasion to explain by examples, the seat of incurable disease, and the small glands or lacunæ of the tarsus, or cartilaginous borders of the eyelids, form tumors extremely firm and unalterable in their nature, sometimes indeed stationary, but never resolving under any course of treatment, and often causing such pain and inflammation of the eye as to require extirpation*. All the parts, in short, of this delicate organ, whether

[* Yet have I often met with tumors of this part which have suppurated and resolved, after the knife was thought necessary.]

proper or merely adjacent, are subject to tumors more frequently cancerous than mild.

The breast is a gland destined to perform a secretion more profuse and rapid, in proportion to its size, that even that of the salivary glands, and more elaborate. It is subject to great periodical excitements; at each menstrual period it swells slightly, is greatly enlarged by pregnancy and suckling, and in warm climates, or diseased constitutions, in all countries, it is the part first and most conspicuously enlarged. The period of life at which menstruation ceases is so critical for this gland, that it then falls into scrophulous and cancerous diseases, having every variety of aspect*. Sometimes the whole breast is indurated and enlarged, with a swelling so truly scrophulous, that I have seen the breast suppurate, burst out like other scrophulous glands, heal at one point and ulcerate in another, become indurated to an extreme degree, and pour out from various opening a limpid serum in profusion, proportioned to the natural secretion of the gland. Often there take place, both in women who give milk and in those more advanced in years, a voluminous abscess, which is both formed so slowly, and lies deep involved in so thick a mass of indurated gland, and so void of pain, that it is distinctly marked as a scrophulous disease. In both the affections of the mamma here described, though as far removed from schirrus, as scrophulous swelling of the testicle from cancer of that part, I have seen the breast amputated. From scrophulous inflammation, blows, milk fever, or in consequence of that in-

[* But at this period of life cancerous tumors are more to be dreaded than scrophulous. In earlier life they are seldom cancerous.]

describable change which takes place at the ceasing of menstruation, the gland of the breast is hardened, either in one mass or in separate kernels, which, however long they may remain indolent, become sooner or later inflamed, and then the proper gland of the breast, the lymphatic glands connected with it, the skin, and cellular substance, even the pectoral muscle itself, are apt to be massed together into one hard globular and ponderous tumor, with separate glandular tumors interspersed in the surrounding cellular substance. When this mass ulcerates, the axillary glands, previously indurated, also inflame; the skin of the axilla reddens, as that of the breast ulcerates; the whole armpit swells, the arm becomes œdematous, and lies powerless; and the patient dies in a most loathsome state, with foul and very fœtid matter running from the sore in great profusion, so as to make the last offices of friends difficult to perform. Sometimes this disease begins like a kernel in the centre of the gland, sometimes like an excoriation of the nipple, sometimes like a mere contraction and induration of the skin, not beginning invariably round the nipple, but extending, as I have several times remarked, from the axilla downwards, so as to affect the breast. Thus a careful observer sees in the course of practice a sad variety of disease in this part, according with the various structure of those parts in which the disease begins, or the species of the malady, whether varicose, scrophulous, or cancerous; varieties which, simple as the part seems to be, are as widely different from each other, as venereal, scrophulous, or simple inflammatory affections of the eye are from one another, or affections of the cornea from those of the humors.

The testicle is a part subject, like the eye and breast, to cancerous affections, often commencing in venereal inflammation, affecting the structure of the gland, or arising from blows or falls, complicated almost always with a watery tumor of the tunica vaginalis, and indurations of the spermatic cord. These diseases, too often concealed even from the surgeon, arrive at their last stage undivulged: but the scene is dreadful indeed when either before operation the testicle bursts out into open ulcer, or, after an operation performed too late, the cord, being diseased, protrudes from the upper angle of the wound in the form of a fungus or cauliflower-like tumor, which it is in vain to extirpate with either ligature or knife, for it shoots out again in a day, bleeds, and discharges the most foetid sanies, accompanied with cruel pains, of which the patient expires.

The membranes lining the nostrils are of so vascular and glandular a nature, so continually exposed to the air, and yet so delicate and sensitive, that tumors arise even from the very slightest irritation. These tumors, mild perhaps in their own nature, are dreadful in their consequences, from being seated in narrow passages, limited not by dilatable membranes, but by unyielding bones, which suffer every kind of disorder when the passages begin to be filled with even the softest of these tumors, while the cavities of the antrum Highmorianum, and other cells far out of the reach of instruments, are often occupied by tumors of a more malignant nature. So destructive are the consequences of even the mildest tumor, growing and distending these passages, that we know not how to admit or refuse that definition of tumor so often mentioned in books, "The Cancerous Polypus;" for

no cancer can be more destructive than even the most simple polypus. Little does the patient apprehend the fate that awaits him, when a small tumor, which he can just touch with the point of the finger, soft, pendulous, void of pain, and attended with no worse disorder than sneezing and watering of the eyes, first appears : it is not that slight sense of suffocation which first alarms him, increasing to a total obstruction, that occasions his death ; but the narrowness and crookedness of the passages of the nostrils and throat, and the vicinity of those parts to the brain, separated indeed only by the thin plate of the æthmoid bone that occasions death. The bones first become soft and carious, and discharge a foetid and acrid matter, which distils in such profusion as to excoriate the lip, and to cause diarrhæa by running down the nostrils and throat. The blood bursts impetuously from the corroded vessels from time to time : the hearing is entirely interrupted by the pressure of the tumor, on the mouths of the Eustachian tubes : the teeth fall out from the sockets, in consequence of the caries of the alveolar processes : the head seems rending asunder with distracting and continual pains : usually the patient is exhausted by long suffering, and frequent loss of blood : sometimes he lives till caries of the æthmoid bone admits the ulceration to the brain, and he dies lethargic.

The gums, when they fall into a diseased condition, hard as they are (and their hardness approaches more nearly to the consistence of the teeth and jaw-bones, which they connect together, than to that of flesh), throw out tumors so luxuriant, so truly fungous, so profusely supplied with blood, that the hemorrhagies from them are, even from the first, alarming, and are

in the end fatal; and the tumors, when extirpated with the scalpel, or torn away with ruder instruments, often sprout up (after the very bones have been laid naked) in the space of twenty-four hours, and effloresce in the course of a few days into cauliflower-like excrescences, and still grow so rapidly, accompanied with dislocation of the teeth and caries of the jaw, that the patient expires of hæmorrhagy, diarrhæa, and cancerous pain. There is no form of tumor I so greatly dread, none so rapid in its growth, as those proceeding from these callous gums, nor any disease in consequence of which I have suffered such severe, unlooked-for disappointments, or seen such unsuccessful operations and horrible deaths. Sometimes the extirpation is successful, and, I think, I can often predict when it will be so; but, when it fails, no cauterizing, nor the most cruel processes of surgery, will repress the after growth; it is truly cancerous, and invariably fatal.

Tumors of the throat, whether external to the jaws, or visible only within, give no alarm but by the effect they produce on the breathing and swallowing; and yet they are, beyond all comparison, the most dangerous tumors, fatal if neglected, and yet so connected with great vessels and nerves, that to extirpate them is almost impracticable.

Suppurations within the throat of a scrophulous nature are frequent; and I shall have occasion to lay before you examples of these bursting by multiplied openings into the larynx and œsophagus, occasioning suffocation by the matter falling into the trachea, or inanition and death by the contraction of the œsophagus, in consequence of long ulceration. Other tumors again, which, at first sight, the surgeon is

disposed to imagine are sacs of purulent or serous matter, and which I confess myself to have mistaken for such, are sacs of blood formed by dilatation of the extreme arteries and veins ;—aneurisms of that kind, which I have formerly described under the name of aneurisms by anastomosis, but lying too deep under the skin and the platysma myoides muscle, and too near to the great carotid arteries and their accompanying nerves, to admit of extirpation. Sometimes I have found tumors, especially occupying the fore part of the neck, in the place of the thyroid gland, to be sacs of blood, but of a structure widely different from that of those aneurisms, and perfectly curable, distinguishable from those cases of aneurism by anastomosis, in having no pulsation, and a thicker sac. The tumor is stationary in respect of size, and not becoming more turgid upon retaining the breath, nor flatter when the blood is repressed by the hand : there is no congeries of active vessels opening into them, and supplying them with blood. The blood, I find, has all the characters of having remained long in the sac, and the sac itself is of a firm consistence, difficultly brought to suppuration, infinitely more difficult to obliterate than those sacs which contain matter or serum, and leaving behind them a permanent thickening of the throat. Aneurisms of the carotid arteries are not frequent, but I have seen a pure and simple dilatation of this vessel under the angle of the jaw, of the size of a fist, intruding upon the throat rather than projecting outwards, little conspicuous as a tumor, but having an awful throbbing pulse, when the palm of the hand was laid over it. One would fear nothing in such aneurism but the bursting, and the loss of life by hæmorrhagy ; but

long before the sac inflames or ulcerates, the fever with which it is accompanied, and the difficulty of swallowing, arising simply from its pressure upon the pharynx, occasion death.

The salivary and lymphatic glands, lying under the tongue, and about the angles of the jaw, are frequently diseased, and form tumors varying greatly in their form and nature, and growing sometimes to an enormous size ; usually they contain a gelatinous matter, thick, ropy, sacculated, and mixed with solid bodies like grains of millet or mustard-seed, sometimes a pultaceous matter : often these tumors are so far fluid, as to give hopes when first the sac is opened, that the tumor will entirely subside, and the sac be easily obliterated ; but so far solid as to mock these expectations, for, while the matter runs out, the base is indurated, so that before the opening of the sac is closed, the base has become a tumor, firm, glandular, and visibly increasing. Sometimes these glandular tumors, especially such as are seated under the jaws, though of a stony hardness, are moveable, subject to no pain nor occasional inflammation, not adhering to the skin nor subjacent parts, but indolent and harmless. Always in children and boys, sometimes too in adults, such indurated glands are harmless ; but of firm and knobulated tumors, especially of those seated in the cheek, covered with a coarse, porous, and puckered skin, and connecting themselves strongly with the surrounding parts, livid on their more prominent points, and aching with every change of weather or season, I have never seen a happy issue. There is no safety for the patient who is endangered by such a tumor, except in extirpation ; nor can we

assure him that such operation (not always void of danger) will eradicate the disease.

Here, gentlemen, are depicted no fantastic scenes of misery. These preliminary sketches and characters of tumors shall serve as a slight index of the subjects I have to explain in detail: the varieties of suffering will be but too truly confirmed by facts: the distress the patient suffers who dies of any form of tumor, whether suffocating, carious, or cancerous, exceeds whatever the most eloquent writer on professional subjects could represent, or the warmest imagination conceive. Believe me, it is the sufferings of individuals that have given me such deep impressions, and you shall feel, before I have finished the narratives of the cases corresponding with these characters, how little I am inclined, how little I need to exaggerate, the importance of this subject.

Could any thing interest us more warmly in the fate of those who have tumors, it would be the unconsciousness on the part of the patient, during all the early stage, of that danger which the surgeon so distinctly perceives, and of the uncertain tenure on which he holds his life; and, in the latter stages, his meek and composed resignation. All ranks and descriptions of men have an interest in this subject, the poor who are neglected, the rich who are timid, and often wilfully deceived; the surgeon too, who has often no alternative left him, but that of risking the life of his patient by some adventurous operation, or pronouncing sentence of irremediable disease. The poor, indifferent to every lesser deformity, insensible to every slighter pain, ignorant and thence unconscious of remote consequences, improvident always,

and often stubborn, suffer whatever tumor rises in any part of the body to grow uncontrolled ; nothing alarms them which does not interrupt their daily labours ; and as it requires an effort of the imagination and a cultivated reason to conceive distant dangers, it is in vain that you explain the future consequences of a disease like this to men in a lower rank of life. Their family is supported by their continual exertions, and, though inclined, they could not remit their daily labours ; tumors are thence permitted to grow till they attain an enormous size, and loathsome appearance ; then, unable to work, they decline into poverty, become objects of charity, and nourish those tumors which are to cause their death, as the present means of gaining their bread. Among the peasantry, and among the poor, the want of means of present sustenance, and the distance from good advice, prevents them from applying for relief ; and the country surgeon, unsupported in any just resolutions he may form, and surrounded by rivals, will not readily attempt an operation, which, even if successful, brings him no proportioned gain, and little honour, but, if unfortunate, involves him in disgrace and ruin.

Even those of a higher rank, and well-informed minds, know not how to submit to present pain, in order to escape distant and eventual dangers. Though conscious that a tumor not void of danger is forming, they linger on in hopes of a spontaneous cure ; they have heard that such tumors have disappeared, they have been told that such have been resolved, and would gladly commit themselves to the veriest quack that ever posted a bill, or sold a nostrum, to a man with whom they are ashamed to find themselves con-

versing, if only he will promise, with his ointment or plaster, to resolve the tumor, rather than to the care of the most eminent for professional knowledge, and of their own rank in life, if his discourse leads only to warn them against delay, and to declare plainly and conscientiously the danger of it. A tumor, however formidable in its nature, appears at first but a deformity, and bears often no character of disease, nor of malignity ; it is not discoloured, it is not painful, it affects not the general health, and grows by such slow and imperceptible degrees, that the patient becomes reconciled to his condition, insensible to its growth, and indifferent to danger which seems so distant, while his surgeon, whose professional celebrity and daily gains have been slowly ripening, is unwilling to risk them on a barren enterprise. The surgeon and the patient thus conspire to deceive each other ; agitated by alternate hopes and fears, they feel one day persuaded that some decisive step should be taken, and the next believe but too willingly that the tumor is lessening, and may perhaps vanish, while “ on their wisest resolutions, the slow inaudible foot of time steals like a thief.”

DISCOURSE II.

ON THE UNLIMITED GROWTH OF TUMORS ;

THE FACT PROVED BY VARIOUS EXAMPLES, AND INFERENCES OF VERY
GENERAL APPLICATION IN PRACTICE DEDUCED FROM IT.

WHAT the laws and ordinances of nature are, in nourishing and maintaining the parts of the animal

body, we need not too scrupulously inquire : how the particles of which it is composed become unfit for their uses, why they are absorbed, how they are replaced : by what sort of secretion bony particles are supplied by bony particles, muscle by muscle, or skin by skin. It is sufficient that we know that this is the work of living and active vessels, and that this work is sparingly performed when their action is slow, perfectly when their action is vigorous and healthy, and which is so invigorated by various excitements as to produce, in parts much used, an augmentation of bulk, and, in parts morbidly excited, an unnatural size. Into these laws we need not inquire, since we find we can but slightly influence the functions of nutrition and secretion essential to ordinary health, while the morbid increase of action, from which tumors and unnatural growths arise, we can in no degree control. To enter into such a train of inquiry would delay the useful and practical purpose of my discourse, which is to describe the characters, forms, and effects of tumors, and it would be not less vain than idle ; for the physiologist might as well pretend to investigate the process, by which the individual begets a succession of individuals, as that by which the animal body generates new parts : how other secretions are generated we must first learn, before we can know how nutrition is performed, or the atoms and particles of the human frame continually withdrawn and replaced, so as to maintain the individual body, though by particles subject to continual fluctuation and change.—The simple fact is all we can pretend to know : a river is not less an individual river, because its particles of water flow unceasingly towards the ocean, and are replaced by others ; nor a tree less

an individual tree, though its flowers, fruit, and leaves are deciduous, and its branches subject to decay and reproduction, by the assimilation of new particles and the formation of new parts ; it is in the same manner that the animal body, though incessantly changing in all its particles, is yet the same. In its recrementitious parts this change is sensible to all ; to the philosopher it is as certainly known to take place in the blood which enlivens the features, and in the parts through which it shines ; and by no set of phænomena is this so well ascertained, as by those of tumors and unnatural growths, which magnify, as it were, the invisible phænomena of health into facts visible and tangible.

In the animal body there can be nothing unnatural, nothing which is not referable to some physical law : health and disease result from various degrees of the same natural action : the same animal process which nourishes the parts of the human body, if but a little increased, augments them in an unnatural manner ; so that betwixt regular nutrition and that which constitutes disease, I know no distinction, except in degree. Nutrition is that natural process by which those injured particles of the body which need to be continually removed for the preservation of the healthy state, are unceasingly replaced in a limited, regular, and orderly proportion, according to the use, the exercise, the secretions, and other necessities of each individual part : a process, unceasing, insensible, attended with no disorder nor consciousness. Tumor is an excessive secretion and assimilation of new particles, exceeding the necessities, and transcending the natural limits of the part ; an augmentation of bulk, without a change of texture ; for it is an addi-

tion, particle by particle, of bone to bone, skin to skin, gland to gland, muscular flesh to muscular flesh, and, like the usual healthy process, it is silent, insensible, and void of pain or consciousness. The part or organ becomes unnatural from its increasing size, uneasy from its bulk or pressure, dangerous from its influence on the surrounding parts : if skin is irritated, bone fractured, a gland, &c. bruised and injured, the vessels of such part are excited, but not in such degree as to destroy its texture, not so as to produce inflammation, effusion, and ulceration or gangrene, but so much only as to administer nourishment more rapidly and profusely : the part thus affected grows, but is unchanged : the tumor is skin, bone, gland or muscular flesh unaltered : if fat is secreted more profusely, the tumor is of fat ; if any natural secretion be increased and confined, as in glands or bursæ, the tumor is fluid and sacculated : whatever changes come, in the after stages of a tumor, to alter its nature and add danger to deformity, we shall be careful to describe as the several species of tumor pass in review before us. Tumor has been defined “ a new part superadded to the body :” it may be, that there are tumors of this description, but they are such as I do not know, and cannot conceive. It seems to me that every tumor is a mere accretion of nutritious particles in skin, bone, gland, or muscle, according to the nature of the part : tumor is, in short, either an increased nutrition, or an increased secretion, modified indeed, in its form and character, by many changes produced by occasional inflammation or ulceration.

As I have expressed an unfeigned diffidence in the general view I have laid before you, over-rating, I

fear, the importance of this subject, I must next crave your indulgence in thus beginning the actual discussion of it, with views seemingly founded in speculation, but really opening upon me, during a long continued attention to practice, and always, I hope, connected with practical facts. There is, gentlemen, a wide difference betwixt scrutinizing the secret operations of nature, describing confidently the shape and substance, the essence and nature, of certain particles, which, by sticking in the extreme vessels, cause tumor; and performing the more humble but profitable task of observing such varieties and forms of tumors, such beginnings and conclusions of diseases, as are plainly exposed to the senses, and connected with the patient's fate. There are but two conceptions we can form of the nature of tumor: either, that something specific in the matter, or something peculiar in the vascular action of a part produces a tumor, firm or soft, of fat, of cartilage, of bone, or of flesh, according to that specific action; or that the properties of the vessels, which are by violence or disease, by a bruise, fracture, cold, heat, or other foreign cause, thrown into excited action, determine the nature of the tumor, or, in other terms, of the secretion, fluid or solid, of which it is formed.

This trade of making theories is old enough, if that could be an apology for it: and the language even now in use, and which is supposed to explain all the difficulties in the pathology of tumors, is actually as old as Galen, who says, “Of all the preternatural tumors, every variety proceeds from the nature of that influx, which causes it (*Omnium tumorum qui præter naturam sunt, varietas, ex ejus, quod influit, natura nascitur*);” and the influx of

pituitous, crude, thick, purulent, and bloody humors is next copiously illustrated. Severinus comments most learnedly upon this.

But, while we record particular facts, we cannot but remark, that the complexion and concatenation of these facts implies certain established laws of the animal economy, very observable and very important to observe: we cannot but remark, that vascular action is excited by blows and other injuries; and tumor and swelling, very different in their nature, or, in other terms, increased secretion and increased nutrition, follow in proportion to the mode or degree of the exciting cause; and that in such invariable connexion, and with such important, essential reference to the support and maintenance of the animal body, that I cannot but regard this connexion of excitement and growth as the distinguishing property of living matter: "That it is the character of living matter to be thickened by use, strengthened by violence." In living matter distention, which is a species of violence, while it extends the substance increases its bulk, by exciting the nutritious process; while in every form of inanimate matter, having no such resisting power, extension (the genus into which all kinds of violence are resolvable) tends to weaken and destroy its structure.

Little as there may appear of either novelty or interest in the principle here announced, you will find that it has a very curious relation to all the phænomena which the duties of your profession call you to observe, and it will, I doubt not, have, in future, a remarkable influence on all that you do. Extension of living parts, whether by the fulness of vessels; by the intenseness of vascular action, by the distention

of hollow organs, by the gravitation of the solid viscera upon their supporting boundaries, or the dependent posture of parts of the body ; extension by twisting, bruising, and by other kinds of violence ; extension by the natural but too violent exertion of the limbs and motion of the members, is the kind of danger from which the several parts of the body most need to be protected : and they are protected by this one distinguishing property, viz. of thickening and acquiring strength under extension or excitement, whether such extension arises from living actions within the body, or violence from without.

Extension in an inanimate body, by separating its particles, weakens their cohesion, and if continued or increased beyond a certain degree, the substance gives way and is broken or torn asunder. Were the effects of extension the same in the living body as in dead matter, were distraction of the living fibres unaccompanied with vascular action, or increased nutrition, were each particle of living matter to become thinner in proportion as it were extended, how could the animal body exist? Surely ruin and disorder would take place in all the parts of a machine, where every pulse of the artery, every turning of a limb, every slight and every forceful exertion, every act of respiration, every natural and vital action extends the parts irregularly and continually? Were not the parts of the animal body thickened in proportion to every violence, no limb could be extended, no joint could play, no muscle contract, not a breath could be drawn without injury irreparable : but all this is natural, and wholesome exercise, because every the slightest extension is followed by proportioned excitement of the vessels, and proportioned nutrition, which sup-

port the parts of the body equally against the vital functions of respiration and circulation, and against external injury.—Hence even frequent lesser exertions are invigorating, and slighter violence creates a proportioned strength; and the porter, the carpenter, the sailor, has his limbs, his loins, his arms, thickened by exercise, so that the bulk and massiness of each part is increased by slow extension, or, in other terms, by use. Distention is accompanied with accelerated vascular action, and increased nutrition; and that action of the arteries which generates tumors, in place of having in it any thing specific or peculiar, tending to form at one time a solid, at another a fluid, in one part a mild, in another a malignant tumor, resolves itself into a simple property of living matter, viz. that, under violence or excited action, a part grows: for always, where the healthy functions are preserved, and the structure not injured by excitement, the nutritious process is quickened. This is a property so inseparable from living matter, and so essential to the preservation of the animal body, that, in no circumstances can a part be extended without being thickened, unless indeed it be lacerated at once, its structure destroyed, and no room left for vascular action to interpose. The parts of a living body extended in an unusual degree, must be thickened in an unusual degree; we could as well imagine a moving body to pass in the same given time through twice the space traversed by another moving body without any superior velocity, as a part of the animal body to be dilated beyond its usual dimensions without an excited vascular action, an increase of nutrition, and an augmentation of bulk.

We are in the daily habit of disregarding the most

obvious conclusions, and looking upon changes of bulk or structure as natural, only when such change is within certain imaginary limits, which we know or believe to be consistent with health : but, no sooner are we alarmed with the degree, or fearful, or actually suffering from the consequences of any change of structure, or extension of bulk—no sooner does it by the addition of pain or ulceration assume the complexion of disease, than we are willing to separate it then from other natural phænomena, and to look for some unusual cause. We see, for example, all parts of the body, the bones excepted, having a perfect aptitude for extension, and capacity for contraction, especially the skin, the abdominal muscles, the hollow viscera, the womb ; and we find this capacity of distention and growth destined to preserve the animal body from degenerating into disease. When we see the uterus distended by pregnancy, the stomach and bowels by gluttony, the muscles and skin of the abdomen yielding, in the indolent and luxurious, to over-distension, the scrotum yielding to hydrocele or to swelling of the testicle, and the delicate membrane, the peritoneum, relaxing and enlarging, when the bowels descend in form of rupture, we hardly reflect on the property by which parts are at once dilated and preserve still their natural thickness : nor are we aware that there is any essential difference betwixt the effects of distention in living matter or dead : but when we observe that the uterus once enlarged by pregnancy, the breast by suckling, the abdomen by distention, the skin by an increase of fat, the peritoneum by being dilated, do not shrink again to their original size, we are conscious that there is an acquisition of new matter ; an actual growth.

Let us, in first considering this subject, keep in view the natural functions, and such distentions of parts as are consistent with health, yet explain the changes which lead to disease. The uterus is constituted with an active system of arteries, to nourish the fetus; and endowed with a capability of extension fitting it to dilate as the child increases in size to the period of birth, or to contain more than one. Its veins seem peculiarly adapted to dilatation: in dissecting the gravid uterus, we should be inclined to imagine its increase of thickness depended solely on the calibre of its vessels being enlarged, and consisted more in fluids than in solids; but when the lochiæ have flowed,—when all that is superfluous of the fluids is discharged,—when the blood accumulating for nine months is disgorged, we find that the uterus does not subside to its pristine size, that there is a great difference between the uterus once pregnant, and that of a virgin; we find, in short, that its mass is increased, that there is an actual growth.

To what cause is this to be imputed? I believe you will acknowledge the probability, of the whole substance of the womb,—of each lesser vein and petty artery having actually increased in thickness of coats, i. e. of fleshy and cellular substance, if I succeed in proving, that no individual vessel is at any time dilated without a proportioned and a permanent thickening of its coats. Perhaps no dilatation can be more simply so than that of a vein which gives way because of the delicacy and tenuity of its coats, and becomes varicose: yet the most simple varix is not a mere dilatation: no vein is dilated without having its coats thickened; and no smaller branch of vein or artery is ever dilated to nearly to the size of a trunk, without

having more than the strength of one. I have never dissected the veins of a varicose testicle, or varicose leg, which had not coats thicker and more leathery than those of the vena cava. The tumor produced by a varicose vein is permanent, because it is truly a tumor,—because it is not mere dilatation but actual growth,—because the thickness of coats, and the bulk proceeding from the induration of cellular substance, at least, equals that produced by the collected blood. Perhaps there is no mistake more common than the imagining that a varix, being a mere dilatation of a vein or veins, may be dispelled by pressure; experience proves how impossible this is, and the extirpation of a varicose vein demonstrably proves how much the coats and cellular substance are thickened.

When we feel a varicose leg knotty and deformed with the tortuous and dilated veins, we distinguish knots at certain points so hard and firm, that we cannot but imagine, that in such sudden turns and angles of the veins the blood is firmly coagulated; but upon dissecting these, we find that such turns of the veins are the parts least occupied with blood, and the most thickened and hardened in their immediate coats, and in the surrounding cellular substance.

When an artery gives way by some weakness in its coats, so as to form aneurism, it is generally found that some weaker part of its muscular or fleshy coat yields; if the tube give way all at once, and pour its blood into the cellular substance, forming what is called a false aneurism, then is it entirely destroyed, and no interval left for excited action to interpose and thicken its coats; but if its sides yield gradually, and are merely dilated, preserving still their natural circulation, that natural circulation is quickened and

excited, by the partial injury to its structure, and the coats of the artery are thickened to three or even to ten times their natural size, the degree in which they are thickened being proportioned to their original strength and present dilatation, the thickening increasing as the dilatation proceeds. What aneurism was ever found, in the artery of the ham, in the thigh, in the carotid, or in the aorta, without coats of very surprising thickness, so as in many cases to constitute a very considerable proportion of the tumor? In this case, as in that of the yielding of some important vessel, we are used to imagine some particular interposition of nature, and are apt to say, “nature has been provident and careful in walling up the weakened parts of the vessel, with thicker coats :” but nature is more provident than such a disclaimer supposes ; nature intrusts not the repairing of each accident, weakness, or breach of continuity, to specific exertions adapted to the particular purpose ; but regulates such interposition by one general property of living matter, viz. of thickening in proportion as it is extended : as wounded parts are healed by adhesion, so are dilated or strained parts thickened by increased nutrition.

The effect then of this property inherent in the parts of an animal body of growing under distention, is to substitute thickening, bulk, tumor (the least inconvenience we can expect to suffer after a part has been hurt or has given way), to actual bursting, danger, and death. Tumor, and various modifications of disease follow from the same law of vascular action and nutrition, which maintains health. If each individual vessel, whether artery or vein, have its coats thus thickened by dilatation or partial laceration, the same must be presumed of each minuter vessel in the

distended womb, of each lesser vein and petty artery in a piece of distended skin, or in a diseased gland: the enlargement then of each blood-vessel, by deposition of nutritious matter along its sides, makes not a mere extension of vessels, but a solid and permanent bulk: the more vessels are enlarged, consistently with their healthy action, the more particles are they able to secrete; whence the increment of tumors is perpetually accelerating, unless when opposed by peculiar causes; but to push our inquiries farther than this general law were a vain and idle attempt.

The breasts, the scrotum, the glands under the chin, and all the pendulous parts of the body afford conspicuous examples of the effect of distention; for a pendulous posture is the most irresistible of all distending causes, being the most unremitting, the most gentle, the least interfering with the regular process of nutrition, the most continually soliciting an increase of vascular action. Breasts in women have all the mechanism fitting them for a profuse secretion; at the period of life in which this secretion may be required, they attain their bulk; when the mother is to suckle, the breasts swell, and subside but in a slight degree when the flowing of the milk relieves the vascular action that prepares it. The period of suckling leaves behind it an actual increase of size, never to subside again: successive periodical enlargements in those who have been long nurses, enlarge the breasts to an enormous and displeasing degree, approaching as nearly as may be to disease. These painful and occasional excitements of the vessels of the breast, preparing it for secretion, often so far exceed the healthy and natural degree, that the purpose of secretion is defeated, actual effusions take place

into the cellular substance, suppuration ensues, the glands are much hardened, and the breast destroyed so as never after to secrete milk but imperfectly: and when to this natural enlargement, the pendulous posture is superadded, as in the warmer climates, where the breast is left unsupported, the whole breast enlarges and hangs low, the skin is elongated, the milk glands may be felt in knots and clusters, as distinct as stones in a bag; and suckling being continued unceasingly by the women of those climates, the child grows strong enough to climb and cling to the mother's back, while her breasts so relax as to be easily thrown over her shoulder for the little one to feed and suckle.

No example nor proof can be more simple and impressive of the effect of distention, than the change which the delicate membrane of the peritonæum undergoes, when protruded before the intestine in case of hernia: in itself the peritoneum is thin, delicate, and transparent; when first protruded it is still thin; but at each successive protrusion,—after each paroxysm of inflammation and pain, after being extended a little wider, and pressed a little lower at each descent of the bowel, it grows thicker and harder, till it can be no longer recognised as a portion of the peritoneum: I have found it in the hernia of an old beggar as thick as his leather bag, and as coarse and rigid in its texture.

In the more simple disease of hydrocele, the effect is invariably the same; and the tunica vaginalis, a part originally more delicate, acquires a massiness and substance which I have never seen the herniary sac attain to: in a hydrocele increasing for a long course of years, every exciting cause, and every dis-

tending power co-operates, both to thicken the parts by continually soliciting nourishment, and to harden them by occasional inflammation:—first, the blow which occasions the disease (for it is in nine of ten cases a blow that causes hydrocele) excites the vessels, and causes an increased secretion; second, the collection of water gradually increasing gives the stimulus of extension; thirdly, the dependent posture of the part gives effect to its weight, and the distention of the part, and its weight, both continually increasing, accelerate the growth in a geometrical ratio; so that a hydrocele, when once allowed to surpass the usual bounds, is sure, if the patient live, to attain to an enormous size, with coats, or walls rather, proportionally thick. William Hill, a farmer, a coarse big man of fifty years of age, had nourished a hydrocele from the time he was of the age of seventeen: when he came under my care the tumor was of an enormous magnitude, it occupied only the left side of the scrotum, pressed the right testicle far above the groin, and extended quite to the os ilium of its own side, being covered with a coarse-grained skin, for the rugæ of the scrotum had greatly enlarged: the waters of this hydrocele were too turbid not to be perfectly opaque, and the walls too thick, besides, to allow any degree of transparency; but the fluid, though it could not be seen, could be very distinctly felt; the sac was every where sensibly thick, and in many places hard, but especially at the middle of the tumor, where it seemed to be girded as if by a firm and hard ligament, and along the back of the tumor, where the spermatic cord could be distinctly felt, big and hard, as if absolutely converted into a ligament. The body of the testicle was also easily

distinguished at the lower and back parts of the tumor.

It was about thirty years before the time of his putting himself under my care, he had first perceived, after a slight blow, a swelling in the scrotum which for seven years had given him occasionally much uneasiness ; to this period of occasional pain succeeded a softer swelling which hid the testicle. It was in the month of October that he came under my care ; in the month of June preceding he had fallen from a cart, and bruised the scrotum so as to excite violent pain, to which succeeded inflammation upon the surface, and a visible and rapid increase of the tumor ; and the swelling having subsided, and the redness of the surface disappeared, I performed the operation in the month of October. It was obviously dangerous to draw off the water, and attempt to obliterate, by a wine injection, a sac so large that it must have sloughed, and impossible to draw it off and let it collect again, so thick was the sac and so rigid. I made my incision along the fore part of the tumor, and much as I was persuaded of the induration of the sac to a cartilaginous degree of hardness, I was yet surprised to find a substance which actually resisted my knife ; I was forced to make an oval incision, the form best suited indeed for laying open a sac so thickened as to require (much of it at least) to be cut away. I performed in short the obsolete operation of Sharp, cut out a very large oval portion from the fore-part of the sac, eight or nine inches long and four broad, which was not merely thickened, but actually ossified in its central parts. The whole sac was exceedingly thick, and the ossified part, the borders of which were of a cartilaginous thickness,

exceeded five inches in length and two in breadth ; the part which lay upon the spermatic cord was so firm as to be felt from behind, while the sac was entire, and so studded with watery vesicles that it needed to be laid open by an incision. The testicle was sound, and not enlarged beyond the healthy condition, or very little : the water was clear but viscid, and amounted to seven pints : such a sac could not shrink, could not re-unite ; much more of it, I doubt not, should have been cut away : had I been at this time an older, and a better surgeon than I was, I should have cut away much of the enlarged scrotum, and all the sac, leaving no more than merely to cover the testicle : I felt very soon the error of my seemingly lenient proceeding, for the operation being performed on the 10th of October, I found on the 19th, when the dressings were first removed, a suppuration not well established, and the scrotum and sac sloughy and gangrenous ; but by the dressing of the 22d I found much of the slough separated, and my fears quieted ; by the 29th I found the thickness and bulk of the groin, and the tumor of the spermatic cord, much diminished by a profuse suppuration, and in the end my patient was well and happily cured.

Rarely, in these countries, though very frequently in our Indian possessions, do we find the scrotum and coats of the testicle thus thickened and indurated ; but sometimes they degenerate, in consequence of long continued vascular action, into a fleshy mass of astonishing weight. Such, for example, are the monstrous hydroceles, or hernias, of which we have drawings by Mr. Kite of Gravesend ; such are the enormous and disgusting tumors which are seen in

our colonies, where the African subject to this disease is seen basking in the sun with a tumor filling all the space betwixt his legs, and as bulky actually as his body, too ponderous to be carried by a sling, and which he trundles along upon a sort of barrow, and exposes to public view to extort alms from the passers by. Such are the enormous tumors operated upon by Mr. White of Manchester*. When the testicle

* About five years ago I was sent for to T. B. a farmer near Leigh, in this county, of upwards of sixty years of age. He had a large tumor in the scrotum that reached down to his knees, and was thicker than his waist, which he apprehended began in his right testicle. It had been twenty years in growing to that size, and had for some years past occasioned great difficulty in walking. A few weeks before, the tumor had suppurated and burst, and continued to discharge a very offensive matter in great quantities. He had likewise from his youth been troubled with a hernia of the same side. The penis and the other testicle were buried in this tumor, which appeared to be a confused mass of putrid flesh. The discharge had brought on hectic symptoms, and he was now confined to his bed, seemingly in the last stage of a consumption. I informed his friends that there was no chance but from an operation, and that but an indifferent one, as his age and extremely weak state rendered him but very unfit to bear an operation that must necessarily be severe and tedious, from the great deal of dissection requisite to preserve so many parts of consequence. It was however consented to, and I began with a longitudinal incision, made very cautiously, in order to discover the contents. I found that the intestines occupied the upper part of the tumor, in as large a quantity as would have filled a hat crown, and that the lower part appeared to consist of the right testicle, larger than a man's head, and hollow within. I reduced the intestines through the rings of the abdominal muscles, and retained them by a stitch through the teguments. I then proceeded to dissect away the tumor, and left the penis and other testicle entire. The blood vessels were secured by dry sponge, and the common dressings and bandage were applied. The wound went on very happily, he continued to gain strength daily, and is now as hearty and strong a man as most of his age, not suffering the least inconvenience from the disorder. I however advised him to wear a truss to prevent the intestines from pushing down to the cicatrix.

My father has favoured me with the following nearly similar case.

July 20th, 1725. I was sent for to Mr. Warrington of Whaley-bridge in Cheshire, a very tall, strong, lusty man, aged seventy-two. About twenty years before he had perceived a hard tumor in his right testicle, which had since that time gradually increased to such

was from long disease become spongy, and putrid, and enlarged to the size of a child's head ; where the

an enormous bulk, that he could not, without the greatest difficulty, either sit or walk. At last, the pain occasioned by its tending to suppuration, together with the fever, obliged him to keep his bed. He likewise complained very much of a pain in his loins, and difficulty of making water, together with great costiveness. When the bandage by which the tumor was supported from his neck was taken off, I viewed it, and found the scrotum to measure, from the os pubis to the bottom, nearly thirty inches, and apparently capable of containing five or six gallons. The penis was entirely buried in the tumor, a small hole, not unlike a navel, remaining for the discharge of the urine. The tumor had burst of itself in the most depending part, and the people about him had caught a gallon of reddish matter, with a red sediment, besides what was lost in the bed and upon the clothes.

Upon examination with a probe, I found a large putrid body, that proved to be the right testicle in a corrupted state, grown to the size of a child's head, which blocked up the orifice, and hindered the discharge of the matter ; I dilated this orifice with a pair of crooked scissors, and two gallons more of the same matter were discharged, together with the testicle, which I easily took out. Its internal substance was of a bright red colour. After taking up an artery which had been divided, I filled the cavity with tow well moistened with spirit of wine and mel Egypt. made warm, and applied the proper dressings. He rested very ill that night, and a great quantity of thin purulent matter was discharged. His pulse was unequal and trembling, the affected parts were cold, and this large bag, which the day before was three fingers thick in the bottom, callous and rigid, in the morning was become quite flaccid. All these symptoms strongly indicating a mortification, I forewarned my patient and his friends of the danger, in order that extirpation might immediately take place. This being consented to, I proceeded in the following manner : I introduced my hand and arm beyond the elbow by the incision that was already made, in order to find the penis and preserve it unhurt ; I then divided the sac from its base to the hole where the urine was discharged, and dissected the skin round the penis, preserving as much of it as possible towards the os pubis, that the surface of the wound might be lessened. I finished with cutting off both sides from the groin. He bore this tedious operation with the greatest fortitude, and the whole wound was cicatrized in two months. The penis was restored to its natural figure ; and notwithstanding his long illness, his advanced age, and the great discharge of blood and matter, he perfectly recovered a vigorous state of health. It is worthy observation, that the spermatic vessels on both sides had degenerated into ligaments, and did not discharge a drop of blood. The left testicle was soft, flaccid, and increased to near the size of a horse's. It was affected with a perfect hydrocele. The whole mass of flesh, after the operation, weighed eight pounds.

walls of the tumor formed by the scrotum and tunica vaginalis were of a fleshy thickness, where the whole tumor measured nearly a yard in length, while its fluid contents amounted to five or six gallons, and the solid substance amputated to eight pounds; where the parts long extending had at last ulcerated, and where the operator, in extirpating this mass of disease, was obliged to introduce his hand and arm up to the elbow within the scrotum, to grope for the penis and save it from the knife, just as he would have introduced his hand into a gravid uterus to search for and deliver the child!

To whatever cause the original inflammation and vascular action may be ascribed, to time, and the pendulous posture, to the increasing weight, and increasing distention, to that law of the animal economy by which increased vascular action is excited and increased, and nutrition solicited towards a part, must we ascribe the chief bulk of such a tumor; and the surgeon will oftener find it wise to regard such growths rather as tumors which are to be extirpated with a due regard to the other parts, viz. the testicle, the penis, than as hydroceles that are to be opened with the design of obliterating the sac*.

We are conscious that without this very property which so often produces diseases the most monstrous, the body could not exist, nor any part survive one day those slight injuries and that continual waste which the natural actions and motions occasion: “Extension and violence of whatever nature require and produce in the living body an increase of nutri-

* When I come to treat professedly of tumors of the scrotum, I shall lay down a more express rule.

tion." To create a thickening, and a new support to weakened parts, is the ultimate end : excited vascular action is the means : and wherever vascular action is excited, by whatever cause, in a degree not inconsistent with the healthy functions of a part, nor injurious to its structure, that part must grow, be it skin, bone, gland or fat, membrane or bursa, limb or bowel.

Eleanor Fitzgerald, a native of Ireland, born in the county of Carlow, and now about fifty years of age, was carried by her parents, when a child, to Charlestown in South Carolina, to which place they emigrated : there, when grown up, she married a ship-carpenter, and lived with her husband in Charlestown fourteen years, where she bore him seven children. She is a woman of a very singular appearance, her face, of a gypsy or rather Tartar cast, with thick lips, a peaked nose, small eyes, and a wrinkled forehead ; bears the marks of a variety of climates : her complexion is of a deep yellow or dingy colour, sun-burnt and freckled : her hair is very black and matted, the skin of her body fair and healthy, but studded all over, especially on the shoulders and arms, with small tubercles like berries : the enormous growth of skin which hangs from her neck and breast, and which, when she opens her tattered clothes, rolls out like the bowels one turn over another, is at once disgusting and horrible.

About five years ago she embarked with her husband for London, his native place, at Charlestown, in the ship *Charming Nancy*, Captain Stewart, a store-ship, crowded with more than 150 people, passengers and crew. After they had been three weeks at sea, and after they had accomplished, as

she imagines, half their voyage, they were overtaken by a dreadful storm of thunder and very vivid lightning, with rain and hail. The ship was struck about mid-day; the numbers who were struck down and never rose again, and the numbers who were deprived of sight, I fear she, in the fervor of impressing her pitiful tale, exaggerates very greatly; but she herself was struck down, and her husband was among the killed: how long she lay upon the deck she never knew; but upon recovering she was sensible of a smart burning pain on the left side of her head. The part felt heavy, and upon putting up her hand she found that a soft and baggy tumor had arisen all at once, as big, she says, as the crown of a hat, which filled every day more and more, and fell lower towards the shoulder; for it was a tumor of the back part of the hairy scalp behind the ear. The voyage lasted about three weeks, and before the ship entered the Thames this tumor burst, and continued for a long while to distil a pure limpid serum; the bag having by this time descended so low as to lie flapping upon the shoulder: but the ear was not yet elongated, and the tumor was still limited to that part of the hairy scalp, which is distinguished in the drawing by a blacker colour. The serum continued to distil hot and acrid from this thick flap of skin, excoriating the neck and breast, and still the tumor continued to be elongated, hanging over the shoulder, and extending over the breast.

The indifference of one in her rank of life, little accustomed with cleanliness, may easily be imagined: her tumor she nourished in filth and nastiness for a year before she applied for assistance. She, after this,

exposed her tumor (according to her report) to the surgeons both of St. Bartholomew's and Guy's hospitals, who were, she imagines, unwilling to perform any operation. The growth of skin now hung pendulous, not only from the occiput and ear, but from the shoulder and breast. She was persuaded by her priest to go to France, and she found protection and help from a charitable lady of her own religion, who carried her along with her to Paris, and put her under the care of Dessault. It was about eight days after she had been received into the Hôtel Dieu, that the operation was performed. The heaviest and most pendulous part of the tumor, all that was easy to amputate, was cut away; but much of the roots of it was left, and it did not fail to grow again, became pendulous, increased very rapidly, and took those singular forms which the sketches represent, in consequence of its root being tucked and braced down by the long line of cicatrix formed by this unsuccessful operation. She recovered from the incisions in little more than a month, left France about a year after, under the protection of an old lady, mother to Dr. Obrian, whose death she bitterly laments. Since this period, in which she lost her only friend and protector, she has lived a very desolate and wandering life. From London she found her way to Ireland, where she hoped to find her grandfather and grandmother. She begged her bread in Ireland from village to village, and speaks of great distresses she encountered during the rebellion,—sleeping under hedges, in barns, and out-houses; crawling from cabin to cabin, and living on a bit of bread and salt, and often wanting even that slender means of sup-

porting life. To escape the miseries of famine in her native country, she has begged her way hither.

Whether her pitiable tale be true or false, or the number of men struck dead by lightning as mere a fiction as the tale of "Auncient Marineer," and all her voyage from Carolina, as fabulous as the voyages of Sinbad the Sailor, is to us a matter of no concern, and alters no essential feature of her case, where all that is wonderful, and nothing perhaps ever happened in the human body more so, is demonstrable. There may have been in the skin of this woman a general tendency to disease, since the shoulders, arms, and face too, in some degree, are studded with small reddish tubercles. The chief volume of the tumor certainly begins in that part, which hangs thick and baggy from the back part of the head, and its origin in the lowest part of the hairy scalp is denoted by its black colour, proceeding from the roots and stubs of her dusk hair. This coloured part indicating its origin from the scalp, is extended now as low as to the shoulder; it has a firm surface, large tubercles, a scaly hardness, and a blue colour; the stubs and roots of her black hair are seen growing in it. From this descends a great and voluminous roll of skin, which hangs over the breast and belly, to the length of a yard and half, like a bundle of intestines, and from her ear, which is elongated to a prodigious length and size, hangs another corresponding roll of skin, which falling from the neck and face, constitutes a great part of the volume of enlarged skin, which, as she sits, hangs over her knees. Betwixt those voluminous rolls of soft and flaccid skin are the scars of those incisions made in the Hôtel Dieu. One large and voluminous fold, taking the rolls of skin down to

the ribs—serving like ligaments to suspend them, and drawing them into the convoluted forms of intestines, hangs from the neck, and her epaulet-like fold comes from the shoulder, falls over the left breast, and forms the boundary of the tumor on that side where its volume is supported by her arm.

This immense volume of skin is thin where it hangs from the occiput, neck, chin, and shoulder; but is very thick, massy, and doughy-like, at its lower part, where the thick rolls are represented in the drawing lying upon the knees, and supported by her hand, which alone prevents them falling over the knee, almost to the ground. This monstrous growth of skin, the most voluminous that stands upon record, is simply skin, without the slightest taint of ulceration on any part of its surface, or the slightest tingling of pain. It is skin, luxuriant, healthy, extremely vascular, with its cellular substance loosened and evolved, so as to give a doughy feeling when the whole tumor is handled. It is plainly the proper substance of the skin, thickened so as to give it a resemblance rather to flesh; its pores and papillæ are enlarged, and its surface somewhat reddened, so as to resemble skin seen in a concave mirror magnified: in some parts it is livid, with a surface of changing colours betwixt red and blue, like the blue or silvery part of a turkey-cock's gills; and all of it has the same puffed feeling; and as for its general forms, this tumor, which, had it not been partly amputated, would probably have hung from the neck and occiput in full flat folds of skin, is by the scars and adhesions at the place of the incision, so fixed down to the breast, that the more pendulous parts have, in gradually enlarging, assumed the rolls of red and fleshy skin, having no

taint of disease about them, nor the slightest speck of ulceration, some slight excoriations excepted, like those in the groins of an ill-nursed child, and these excoriations are only at the roots of the folds where they roll and rub over each other. Upon lifting up the rolls of the tumor, and looking into their roots, where they are bridled down by the scars of Dessault's incisions, the veins which carry back the circulating blood of this very vascular mass of skin are seen running along those flat adhering parts, like veins upon a mesentery, not small nor tortuous, but straight and large; not such as might be compared with the veins of the arm or neck, but more nearly resembling those on the belly of a horse. Some of these venous trunks are as big as the thumb, tense, and gorged with blood. When she travels about on her begging excursions, she carries her tumor in a sling made of an old table-cloth, as a sower of corn carries the seed in the bag before him: when she sits down, opens her cloak, and unfolds this disgusting and horrible tumor, you can hardly be persuaded that you do not see her belly open, and her bowels in motion! for the rolls of skin, fleshy and red, roll over each other as she handles them; and the slightest handling of one fold of the tumor puts the whole into this vermicular kind of motion:—the whole volume would roll over her knees, but that she contains it in her lap, by putting one or both her arms round it.

Our object is to speculate upon this tumor, which she cherishes as her means of gaining her bread, not to extirpate it, else nothing, as it appears to me, could be imagined more practicable. How so great a surgeon, and so ingenious a one as Dessault, should fall

into the mistake of extirpating so great a volume of tumor with the knife, I cannot imagine, when it would have been so easy, by tranfixing all its roots by ligatures, and compressing it betwixt two rolls of wood, after the manner of a quilled suture, to have mortified and cut it off.

Skin is indeed the part of the human body appointed, from its high vascularity, to nourish the subjacent parts, and carry the circulation to the surface, whence a fair and fleshy skin makes a full plump body, characters inseparably united in the physiognomy, persons, and temperament of northern nations: and destined, by its cellular texture, to yield, to thicken, accommodating itself to all flexures and extensions of the limbs, and to every natural growth and occasional swelling. The skin of a person once dilated by fat never shrinks. The skin of the abdomen, in a pregnant woman, acquires an actual increase of growth, and when she is delivered of her child it remains wrinkled and corrugated, forming a volume of skin, capable of containing two bodies: it is grown, not by extension, which must attend all living as well as dead matter, but from that vascular action which extension excites. This unprecedented tumor of the woman, Fitzgerald's, arises from vascular action excited by another cause; it is mere increased nutrition,—simple growth, skin unchanged in form or texture, with each pore, papilla, and visible particle proportionably enlarged; and in every fold of this tumor are to be seen veins so dilated for the return of the blood circulating within the mass, as to demonstrate the degree in which each petty artery secreting new particles, is invigorated in its action, and enlarged.—This tumor intimates to us, that every



Drawn by J. Bell

Engraved by E. Mitchell

part thus growing beyond the natural bounds has no limits to its growth, unless its structure is destroyed by the excess of vascular action, and that there are few accidental or other means to put a period to that vascular action by which it grows. This persuasion of the unlimited growth of tumors should be present to the imagination in all our future inquiry. This tumor also proves how little there is peculiar in the action by which tumor is engendered; the peculiarity is in the part; the vessels of the skin will secrete skin to all eternity, the vessels of bone will secrete bone.

On the last day of December, 1798, George Edington, a hale stout young man, was urged by his wife to go out and seek a relation of hers, a carrier, who was missing. He got on horseback in a night extremely cold, dark, and tempestuous, with drifting hail and snow. After riding onwards about three miles, he found the carrier drowned in a brook (the mill-burn), flooded with the storm: his cart was overturned in the brook, and his head lay under the shaft, his body being pressed down by the weight of the cart into the channel of the river; the horse still lay on its side, suffocating, and stiffened with cold.

Edington proceeded, with the help of a friend who had accompanied him, to disengage the horse, and raise up the dead body: they first cut the harness, and lifted the cart; the horse, meanwhile, benumbed with cold, struggled to rise, staggered forward, and fell: Edington's horse meanwhile got loose and ran off, and his friend pursuing the horse, left the whole load of the cart upon him: feeling himself thus entangled and overloaded, he made a violent effort, and being a very big and uncommonly powerful lad, he

raised the cart, when the horse struggling again to rise, staggered forward, fell upon him, broke his leg across, and with the weight of the horse he was thrown down into the channel by the side of the dead body; in this state he was found by his friend upon his return, lying under the horse.

When relieved from this condition and raised up, he found his leg entirely broken, and so twisted, that the toes were turned entirely round, with excruciating pain: His companion set him upon his own horse, and while he sat there pulled the leg, and turned round the foot into a more natural posture; but not without violent exertions, and very great pain. He then travelled onwards thus on horseback two miles, called up the people of the alehouse, where probably the carrier had been intoxicated, and while his friend raised the people of the village, and went out to bring home the dead body, he was laid in a cart with straw, and carried homewards, in excruciating pain, and with his limb enormously swelled.

The surgeon came next day, and set his leg, which was fractured a few inches below the knee: it knit in about ten weeks; he then began to walk about the doors, and to go the length of his workshop with the help of a stick. I doubt not he had gone too early abroad, and used too much freedom with his limb, for I find that he had been actually employed in the workshop, and had in the twelfth week cut his ancle with an adze. He still felt pains in the fractured parts, in the knee, and all along the bone to the ancle. The spongy heads of the tibia and fibula, about two inches below the joint, were the parts fractured: there appeared first a degree of roundness and fulness about the part, then a knotti-

ness and irregularity, and from this time began that tumor which is now of enormous size.

His limb was, notwithstanding the tumor and pain, so firm and vigorous that he could, with the help of a stick, walk a journey of ten miles ; but with such excruciating exacerbation of the pain, that the sweat poured from his forehead. The pain was thus excited by exercise ; but from the moment in which his leg was broken, it never ceased, even while laid in bed. When at any time (as his business has occasioned frequent accidents) he has slipped his right foot, and borne up the weight of his body upon the left, he has felt the shock with dreadful pain.

After the bony growth encircling the upper part of the leg had attained a very great size, he remarked, that the general thickening and knottiness concentrated itself into a particular tumor, very small, gradually increasing, seated upon the inner side of the head of the tibia, softish, gristly, not moveable, but inseparably connected with the bone, and rising apparently from its surface. In this tumor the changes of the weather were particularly felt ; it was sometimes extremely painful, never entirely void of pain. Unfortunately it happened, that soon after this softer tumor appeared, he one day, in riding to visit his surgeon, with the design of showing him this tumor, while his horse was going down a steep hill, stopped to button himself up against a shower of sleet and snow ; but he had no sooner dropped the reins on his horse's neck, than it fell forwards ; he was thrown directly forwards, and though he was not conscious of his leg having struck the ground, he felt the shock very severely, and before he arrived at his surgeon's a swelling had arisen over the great bony tumor, so

large, and so general, as to conceal entirely that cartilaginous swelling about which he meant to have consulted his surgeon : from this time he was more pained, more lame, more exposed to attacks of fever, the tumor increasing sensibly, though slowly, from day to day.

The tumor had attained a very great size when, in the third year, it sustained another shock : in stepping across a drain in a ploughed field, the loose earth on its bank gave way, the right leg, with which he made the step, slipped, and the left leg, the diseased one, sustaining the whole weight of the body, bended at the knee, and folded under him with great pain, accompanied with a sense of crackling as if something had given way ; a feeling which he never failed to perceive, more or less, whenever at any time his foot slipped. From this time the cartilaginous and bony growth seemed to acquire new vigour, and increased very rapidly. For three years had he suffered constant dull pain ; every accidental strain or imprudent exertion bringing upon him a severe exacerbation, when he came to town and put himself under my care. The tumor had then attained to the size of his hand, and, though it belonged solely to the spongy ends of the bones (the tibia and fibula), it covered entirely the knee-joint, none of the marks of which could be distinguished, except the patella at the upper part of the tumor. I entreated him to allow his leg to be amputated, and ventured to prognosticate that he would never have one happy hour ; that the tumor would never cease to grow ; that the limb would become a cumbrous load ; that he would lose his profession, and by confinement and pain endanger his health. He argued his youth and strength, and

the various accidents which might bring him relief, and returned home.

It was now, at this period, in the fourth year of the tumor, and, after the second fracture, in examining the condition of the parts, I made the following notes in my Case-book : "The knee-joint, though not without swelling, is free from disease ; the patella lying distinct and moveable behind the upper part of the tumor. The head of the tibia is, at its upper and most spongy part, where it receives the tendon of the extensors, greatly enlarged : the head of the fibula is at once enlarged and removed from its place : the tumor is of a very great size, bigger than the head, entire on its surface, slightly red, and streaked with large blue veins ; it is chiefly a bony tumor, formed in common from the heads of the tibia and fibula, and covers and surrounds the fractured part of the bones. The whole tumor has that firm elasticity which distinguishes all such anomalous tumors as are partly gelatinous and partly bony ; and, upon examining more curiously, we can distinguish parts firm as the hardest bone ; other parts are more soft and yielding, and the whole conveys to the imagination of one accustomed to dissect such tumors a perception of its nature, for it manifestly is formed not so much of massive bone, as of large flat ossifications, which, together with cartilaginous lamellæ, form its general walls ; while the centre of the tumor consists of various cells, containing pus and gelatinous matter, but its centre and basis, where it arises from the tibia and fibula, consist of almost solid bone. A softer part, like a sac, covered with a sort of cartilaginous coat, and containing a gelatinous fluid, partly purulent and, I doubt not, partly bloody, is prominent from the

highest point, and extends, I am persuaded, to the centre of the tumor ; and the prominence of this part foretells the approach of the last and fatal stage of open ulceration, a foetid and terrible discharge : in short, an open caries and hectic. But he suffers less of late, there is more lameness and weakness than pain ; the pain is of late abated, and what he feels, in place of being concentrated in the tumor, runs along the line of the tibia, and stretches down the leg.

“ In short, this tumor, we may venture to say with the profane knight, ‘ we know as well as if we had made it.’ It is a tumor first produced by the callus, which should within eight or ten weeks have taken a decided and limited form, having been kept by repeated accidents in a state of continual excitement and permanent growth. The bone being once enlarged into a tumor, the continued extension of its substance, and the high vascular action, has produced in various parts partial suppuration, and formed irregular sacs and cells : and when, as the disease advances, those cells and cavities have been still farther extended, the surface will become thin and inflamed, and burst out into open ulceration. Then the horrible foetor of the ulcer, the continual pain and the loss of health, will leave the patient no choice ; and make him regret the utter loss of time in the best years and very vigour of his life.”

“ After a long absence, he is again returned to ask my advice. It is now five years since I have seen this tumor, and it is still a tumor,—still entire,—not ulcerated,—not more painful,—nothing different in form from what it was, but enormously increased in size ; so that for the drawing taken in the year 1802, when the tumor equalled the patient’s head only in bulk, I substi-

tute that taken at this present period, November, 1806, when it more nearly approaches to the size of his body. Edward Edington is a big and lusty man, of about 40 years of age, six feet high, coarse and bulky, and the tumor, which I am sorry I have neglected to measure, bears this proportion to the rest of his person which I have here represented: the knee is still unaffected, and bends easily: the leg, though shortened by the fracture in the middle of the thigh, is strong, and able to bear the weight of the body; but the weight of this enormous mass it seems hardly able to bear, and is so encumbered, that he moves, or rather drags it very slowly. That part of my prognostic which I imagined the most certain has failed, viz. that the tumor would in not many months burst out into a horrible and foetid ulcer;—that which seemed least probable is fulfilled, viz. that the tumor, however long he deferred amputation, would never cease to grow. The chief accretion of substance seems to be of solid bone, and the tumor and the limb seem to be extremely ponderous. I have once more tried to persuade him, that, to allow of amputation now, is to save still some of the most precious years of his life; his spirit is broken, and he begins to fall back in the world, and yet is so infatuated as still to hope for relief, when the most prominent part of the tumor, which now threatens to burst, is opened. He urges me to strike the lancet into it: but, aware as I am of the state of horrible ulceration, and hectic which must then ensue, I have firmly refused to do him so irreparable an injury, and again he is gone home to linger on in misery and increasing poverty.”

From this case, what do we learn? That bone,

solid though it be, is a secretion as easily and as rapidly formed as that of skin, and generates a tumor more permanent :—that fracture is a species of injury not to be repaired, like the laceration of soft parts by adhesion, but by the generation of new matter ; that the generation of this new bony matter, or callus, is produced by the excited action of the vessels of the bone, so that if those vessels be kept in a state of excitement by frequent injuries, or, in other terms, by frequent lesser fractures or lacerations of the internal substance, it will continue to be secreted without bounds, and become, in place of a natural cure, a most incurable disease : that the bony secretion, which is usually limited by the occasion, and ceases when the integrity of the parts within is restored, may be perpetuated by occasional violence, as in this instance it was by a succession of ill accidents so perpetuated : that a succession of blows and other injuries after such a tumor is formed excite and support the action by which it was generated, and give a new vigour to its growth, just as the ill-advised stimulants and tinctures of a quack hasten the growth of the most indolent tumor, and hurry on cancerous diseases to the stage of ulceration, or as a blow upon a hydrocele enlarges the tumor by at once increasing the watery secretion, and thickening the coats. It is particularly worthy of your observation, that a tumor rarely continues insulated, but draws into consent the neighbouring parts, and spreads the accelerated vascular action along the contiguous membranes : this is the reason of gelatinous sacs being added to such bony tumors ; for the sheaths of the tendons, the bursæ, and in this instance the strong sheaths of tendinous aponeuro-

sis which spread themselves from the tendons of the gracilis and sartorius, and cover the knee-joint, surrounding completely the heads of the tibia and fibula, enter into the disease, become an integument to the tumor, which had thence gelatinous abscesses and cartilaginous concretions engrafted upon it. Thus does the tumor of a bone affect the surrounding parts, just as a glandular tumor affects the skin which covers it.

[In the case here narrated, we have the best example of the author's ideas of tumor; but it also offers occasion to note the imperfections of his theory. He conceives tumor to be essentially the result of excess of action. But in tumor there is more than this, for there is a structure built up different from the natural texture of the body, or there is such an excess of growth, as to show that the vessels are no longer controlled by the principles which preserve the body of the same form, the same bulk, and the same substance, during the changes it is momentarily subjected to. It therefore appears to me, that to the formation of a new structure, and to the preternatural size and form, there must be a deviation from the natural law of formation; and that this changed or morbid action must enter into our definition of tumor.

In reference to the case narrated above, it presents a variety of important practical questions. In the first place, it is very difficult to determine if the tumor of bone be of a simple nature, or such as are now called fungous, and which quickly contaminate and destroy. Another question will present itself to the surgeon; if amputation be determined on, may we cut off the tumor and the adjoining bone, or must amputation be performed so as to take away the whole

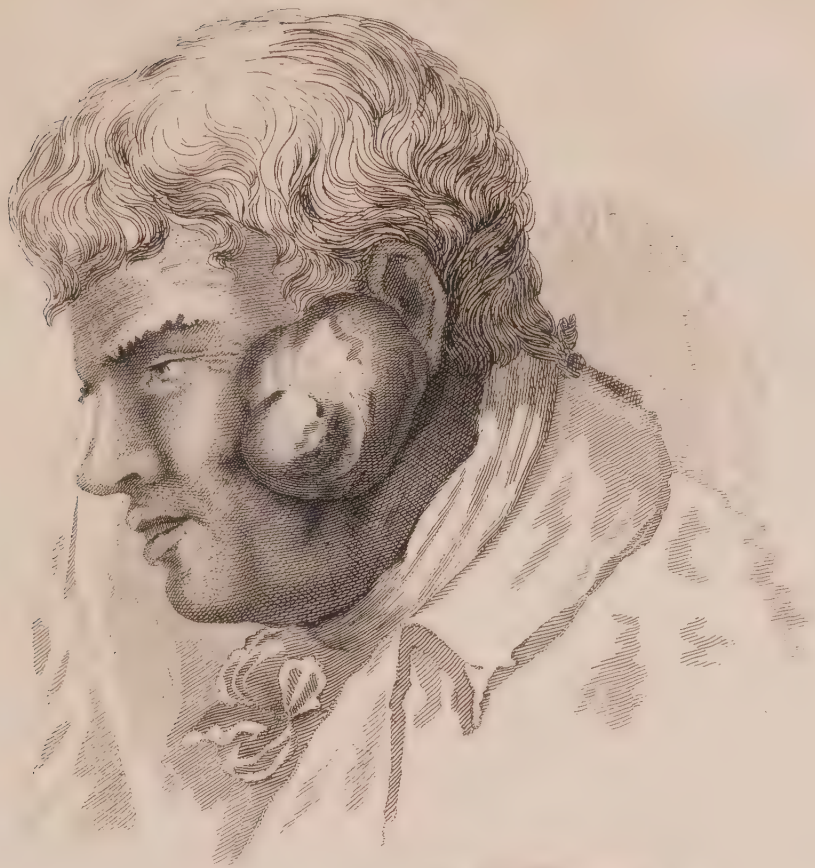
bone? The reason of this question is, that some tumors carry their influence no further than the apparent volume of the tumor, while other tumors of the bone propagate themselves rapidly through the cancelli, from one extremity of the bone to the other, before there is any remarkable external tumor.

All this tends to show the importance of the nature or tendency of the tumor, more than its place or actual bulk or substance.]

“James Hall, a groom, about 40 years of age, a good, sober, and valuable servant, was first sensible of the very extraordinary tumor which I have represented in a drawing, about five years ago: it was occasionally the subject of good-humoured jokes among his fellow-servants, who said James would soon be a lusty fellow, since he began to have the double chin; but he had all along very unhappy presentiments, for he was conscious that something very different, perhaps very dangerous, occasioned the singular appearance they observed.”

“In questioning a patient about the origin of his complaints, you rarely fail to hear of some cause, real or imaginary, to which the malady may be imputed. His apprehension is, that violent sore throats, with which he has been periodically attacked from his boyish years, and which often suppurated, have been in some way the occasion of this disease. It was after one of those febrile sore throats, that his chin began slowly to enlarge, but it seemed merely an increase of that second fold of skin, which constitutes the double chin; it was altogether void of pain, it seemed a mere elastic colourless swelling of the skin itself, nor could he perceive within the thickened skin any particular gland or kernel swelled or hardened.

M. S. p. 261.



JAMES HALL, p. 56.

by J. Bell.

Engraved by E. Mitchell.



It has slowly and imperceptibly increased for five years, and has now attained the monstrous form expressed in the drawing."

" Though the whole tumor is monstrous, it is difficult in words, or even by drawing, to express this, since it has not any marked form, nor any thing singular to attract notice, except its bulk. It seems one general and diffused thickening of the skin, glands, and fascia, beginning under and around the jaws, extending from ear to ear, and now affecting the neck and breast down to the nipples. The skin of the cheek and jaws, in all that part on which the beard grows, is amazingly enlarged; but this, as also all the tumor extending over the neck and breast, is quite moveable, and indeed soft. The proper skin being pinched up, is felt to be thin, natural, and moveable: having pinched up the proper skin, and ascertained that it, and its most immediate cellular substance, is not the seat of disease, I pinch deeper, and find, that the cellular substance nearer the fascia, the fascia itself, and the cellular interstices of it, and especially the cellular substance in which the glands are involved, is the seat of disease: all this cellular substance is exceedingly thickened; though soft and woolly, it seems massy; but the cellular substance and fascia, involving the salivary and lymphatic glands encircling the jaw, are so thickened, that the glands can no longer be distinctly nor individually felt, though it can be distinctly perceived that they are all enlarged. I feel each parotid gland immediately before the ear enlarged to a soft and pulpy mass: a soft flaccid sort of individual swelling, consisting plainly of the enlarged parotid, forms at each ear the general tumor; and the same soft and massy tumor, heavy but moveable, is continued all round the circle of

the jaws, without one hard kernel or individual knot; without a regular basis, or any thing to define its bounds; without any thing that you could (if in such a situation the thing were possible) circumscribe with an incision: the glands of the neck, the *glandulæ concatenatæ*, I distinctly feel through a thickened skin and cellular substance greatly swelled; not as in those affected with *scrophula*, with a hard and kernelly, but with a soft, flaccid, woolly swelling, quite unlike the knobby feeling with which we are accustomed. The cellular substance surrounding the glands seems thickened, and the glands themselves are enlarged. The whole chain of the *glandulæ concatenatæ* forms a mass continuous with that which surrounds the chin, and embraces the whole neck and throat. The skin over the *pomum Adami* is now thickening; the same puffy yet solid thickening of the skin begins to affect the skin of the breast; the right mamma is already remarkably enlarged, and the left threatened with enlargement, so far does the tumor extend downwards: nor does it terminate above in the parotid glands, nor at the ears; the swelling, on the contrary, of those lymphatic glands which lie behind the ears, upon the mastoid processes, prolongs the tumor almost round the head and neck."

From the parts affected, and the form it assumes, ranging round the jaw and running along the sides of the neck, affecting the chin and throat in a particular manner, and affecting even the *mammæ*, we can have no doubt of the relation of this tumor to the glands. But this tendency to swelling in the glands had very early and unusually affected the cellular substance and fascia: had the disease affected the glands solely, the tumor would have assumed a more decided form; had it affected the cellular sub-

stance and fascia chiefly, the glands, of their natural size, would have been no longer distinguished; by affecting both, the glands, fascia, and cellular substance are all massed together in one general tumor. But it is gratifying to be able to prognosticate, especially when our prognostic is in favour of life, and in this case it is plain, a general growth being the cause, that relaxation proportioned to that growth will all along precede it, as is the case in gôitres and all other glandular enlargements, where skin and glands grow with an equal pace. When an individual gland (as the sublingual) is excited to grow, and is bound down by muscles or membranes not forming its immediate coats, these, not being subject to the vascular action which enlarges the gland, do not relax, do not suffer the gland to project in proportion as it enlarges, but become tense and press the gland inwards till it turns the tongue backwards into the throat, or renders the jawbone carious, or compresses the throat, interrupting respiration: but in a tumor like this, where the integuments as well as the gland grow, the pendulous posture, the extension, and the actual growth prevent pressure inwards, so that let it grow to what size it will, there will, in this case, be never any stricture or suffocation: thus it usually happens in hydrocele, that the scrotum and vaginal coat do not grow as rapidly as the serum is effused, they are thence tense and shining; but in very many cases I have observed the scrotum and tunica vaginalis to grow faster than the effusion is poured out, the sac is never full, the scrotum never tense, the tumor always flabby and flaccid; I have seen very often such a hydrocele grow to the size of a child's head, the tumor being still so flaccid that you could make the points of your fingers

meet in compressing the hydrocele at any part : from what cause it happens I know not, but these very flaccid hydroceles are the only ones I have ever observed to disappear spontaneously, or by the help of stimulant embrocations.

Thus we perceive, that of whatever nature the part is in which a moderate but increased excitement of the vascular action takes place, be it skin, or bone, or gland, or cellular substance ; whatever the nature of the original excitement, a flash of lightning, a fracture, a fall, repeated bruises or strains, or some disorder more natural to the part, increased nutrition ensues, corresponding in all respects with the natural, except in its excess ; and when we consider how unceasing the natural process is, and how unremitting the deposition of new parts, we cannot wonder at any variety in this peculiar secretion, or any excessive growth.

It is, I believe, a matter of no slight importance, towards the clear and orderly prosecution of this subject, that we attend to a distinction most natural and essential, betwixt tumor and swelling ; for, while the former is a mere excess of growth, arising from excited but healthy action ; the latter is a sudden and violent action of the vessels, tending to destroy the structure of the part * : in the latter, in swelling, viz. the augmentation of bulk is too sudden to arise from increased nutrition, too painful to be consistent with the healthy structure : when, by a blow, fall, wound, or burn, or by any disease, sudden swelling arises, accompanied with pain, the vascular system of the part acts with destructive violence ; the vessels

[* This is to say, a morbid action ; and shows that the difference betwixt us is in the form of words only. See former commentary.]

themselves are gorged with blood, blood also or serum, or both, are extravasated into the cellular substance, the blood vessels are suffocated, and the high action repressed by those cellular effusions; thus high vascular action causes effusion, and the disease is, in one sense, its own cure: either the effusion is such as may be absorbed, and then we say the inflammation is resolved; or it is permanent, the effusion being such as cannot be absorbed.

But when a blow or other injury has caused a swelling of the eye, the breast, the testicle, if the first effusion is only in part absorbed, if the first violent action of the vessels subsides a little, but still continues above the standard of health, and continues uniform and regular, the healthy function of nutrition is not interrupted but promoted, and the part continues increasing in size, and becomes a tumor. Betwixt swelling and tumor, then, there is all the difference that there is betwixt health and disease: swelling is that kind and degree of injury which threatens to destroy the part; it is high vascular action, accompanied with effusion, and terminating in suppuration, or gangrene; sometimes, however, it is resolved, sometimes it terminates in a thickening of the part, sometimes in tumor: but tumor is a mere increase of bulk, by the slow and regular process of nutrition, usually void of pain, or any uneasy feeling; if the tumor becomes distressing, it rather is from weight or pressure than pain; if dangerous, it is by lying heavy upon the adjacent parts, and causing caries in the bones, or suffocation, or interruption of other vital functions; if it becomes in itself a disease, it is from pain, ulceration, and other changes most natural in the latter stages of every tumor; for whenever

there comes such high vascular action as tends to break up the structure of a part, that violence of action is evinced by pain: and our body seems formed thus sentient, not to torment and afflict, but to preserve and save us; to intimate to us the approach of danger, that, being alarmed by the first feeling, and subdued by continuance of pain, we may suddenly avoid danger, or submit willingly to those necessary privations, and salutary pains, which medicine and surgery impose.

That the arteries of a part, after having begun to act too powerfully, should continue for years to administer nourishment in an increased ratio, without assuming any new or more violent action, without running into ulceration, is impossible: do we not see how various accidents, as cold, or mechanical injuries, or imprudent applications, excite in a tumor a new and inflammatory action?

I shall lay before you a general case, where the exciting cause and the violent vascular action visibly and instantly follow each other, as the stroke does the flash; where the vascular action is so rapid, that we should expect it instantly to expire, or instantly to destroy, but where it nevertheless destroys only in part, returns in paroxysms, and continues for years! When the action which conduces to unnatural growth continues, as the permanent condition of the part, while that more exasperated action which causes ulceration rises above it at times! Where the effects of excited vascular action are demonstrated on so magnified a scale, and are so obvious, that the phenomenon more resembles a physical experiment than a disease. The tumor or swelling produced by frost-biting is the example I mean: the phænomena of

frost-biting, though often mentioned, are never described: for this reason, I transcribe the following concise case from among many, of poor unfortunate creatures who were in one inclement season under my care.

“ John Gowan, a man of about thirty-six years of age, being a hind with a farmer, in the parish of Mid-Calder, was employed in a winter of severe frost, with the other servants, in digging sheep from under the drifted snow. With the help of six of his fellows, he dug a whole day among the snow, from morning to night-fall, and saved about seven score of sheep, eighty alive, and the rest dead. These men began their labour on a Sunday morning, and before night all the party felt the effect of the frost-biting. Three or four of the party were so benumbed, that they knew not for long whether they still had feet and hands; but frost-biting is a very different matter; it is the effect of the high stimulus of heat after severe and long continued cold. Those who were thus benumbed only, without being injured, were probably prevented from approaching the fire; Gowan alone, sitting by a turf fire, which they had kindled on the ground, put his feet close to it: he first felt the flesh creeping and tingling, but as yet his feet, though they seemed heavy and powerless, so that he could not lift them from the ground, were not swelled. Next, sitting still close by the fire, his feet began to swell grossly, to use his own homely expression, like *ban-nocks* *: next, and that in less than a quarter of an hour after this swelling, the fire, which had been hitherto only agreeable, produced a tingling sensation

* A coarse big roll or shapeless loaf, of meal and bran, prepared for shearers and farm-servants in Scotland.

perpetually rising towards actual pain: next, the pain, hitherto indistinct, prickling, and stounding only occasionally, grew more violent at every throb and pulse of the arteries, and in a quarter of an hour more, he became sensible that the fire increased the pain, and withdrew his feet from the fire, but the pain became notwithstanding intolerable, and made him almost cry out: in this condition he got home, and threw himself into bed, where the pain raged like fire all night, a hot tormenting pain; and next morning the swelling was so great, that each of his feet would have filled his hat! They were like clods, quite shapeless, puffed up, very livid in the extremities, and red up the leg. On the third day his feet, as he expresses it, *broke*, the roots of the toes ulcerated, and became quite black, with a horrible fetor."

It would seem to me, from this suite of the phenomena, that the high excitement on the surface brought much blood into the whole member; that the vascular action, though inflammatory on the surface, where the excitement of heat was directly applied, was not so in the central parts of the foot; that the action, so highly excited at first, and which is usually stopped by ulceration, never subsided in this case, because of the ulceration and gangrene being so very partial and limited, but continued in a moderate degree; whence the first and violent *swelling* had become a permanent tumor, subject to occasional ulceration. His feet are now like camels' feet, and it is manifestly impossible that feet so monstrously swelled and deformed should ever subside again into their natural shape: they have not, for five years, subsided in the slightest degree, nor will they ever. They are large, irregular clod-like masses, fitter each

of them to fill his hat than his shoe, and this is permanently his condition : each foot is a round, shapeless, heavy mass, the skin of a dark red colour, the ulcerations about the roots of the toes horribly foetid. The bones of both great toes have been exfoliated, and all the lesser toes are distorted, disfigured, and almost buried in the general swelling : from time to time, the feet swell alternately, with agonizing pain ; first one swells, then, having walked more upon the other, it also swells ; the pain in these paroxysms is dreadful, especially during the night, when warm in bed, and the affected foot throbs and pulsates, as he expresses it, like the heart, and becomes soon so intolerably painful, that he starts out of bed, and, by swinging the foot backwards and forwards in the cool air, procures some relief : his feet have both of them been invariably increasing in size, with each new impulse of blood, and paroxysm of inflammation : for five years they have been growing ; he has been four successive times received into the hospital ; at each return he has remained a month or more, and at each return I find his pains more agonizing, the colour of the inflammation deeper, the ulcers more numerous and foetid, consuming toe after toe, in the fleshy parts, till the blackened bones have dropt out. In short, frost-biting, as exemplified in this case, has nothing of the character which I imagined when first I read of it in books, viz. an immediate and partial gangrene ending in sloughing of one toe or more ; it is, on the contrary, a general and a permanent disease ; still increasing, the parts perishing successively, by new and violent inflammations, terminating in foetid, painful, livid, and gangrenous sores : nor is this the

peculiar aspect of this man, Gowan's case, but the general character of the disease.

Gangrene is said to consist in the exhausted excitability of over-excited vessels, and the blackness to be the consequence of the death of parts ; but the blackness precedes the death. The change of colour is not really to blackness ; it is livor, from extravasated blood ; the blood extravasated through all the skin suffocates the vessels, and stops their action, and when all vascular action is thus interrupted the part dies. In the case before us, the vascular action exists only in the surface ; in a bruise or fracture it takes place through all the member ; in this present case the gangrene is of course partial and superficial, in that other it is universal ; the one distinguished by the title of gangrene, the other by that of sphacelus.

Some facts, illustrating very curiously this doctrine of tumors, I might be inclined to mention, but that they are commonly known ; the practices, for example, of rude and barbarous nations, who procure, by artificial means, an unnatural bulk of various parts of the body ; of the nostrils, which they enlarge by hanging on the septum of the nose ponderous rings of copper ; of the lips, which they perforate and enlarge by dilatation, till they are capable of receiving large shells, or pieces of ivory like drumsticks ; of the ears, which they extend by like means, till they flap, like an elephant's, upon the shoulder and breast. Other arts also known to savage nations, and reported by classical writers on our science, not as I feel they should be in terms of reprobation, I might be induced to mention, but it could only be in the language and terms in which I have read them. I de-

cline descanting on what is merely curious and far from modest or decent, to return to simple observations or plain facts.

The things we see and feel, and which are open to our senses, I scruple not to put down among the obvious phænomena of tumor ; the increasing bulk of a part, slowly augmented by an invigorated nutrition in a solid, or by a more profuse secretion in a hollow part ; the incited action of the arteries ; the pulsation of the limb throbbing with inflammation ; the painful increase of sensibility proceeding from this new and impetuous influx of blood ; the dilatation of the cutaneous veins, by which this increased arterial action is demonstrated ; the reddening of the part by blood being at last extravasated, are among the visible and direct consequences of high vascular action ; so also is the deep purple colour which proceeds from great extravasation of blood, and prognosticates gangrene of the part. These are facts within the cognizance of our senses ; they are a part of those phænomena which it is our chief duty to observe ; but that fluids are inspissated, that fibres become rigid, that tubes and vessels are obstructed, are circumstances far removed from the beaten path of plain fact into the regions of fancy. These are so entirely the inventions of your dreamers of dreams, who have called them their theories, that with those I take no concern, not even to refute them.

I have not, I think, seduced you far into the regions of speculation, either to refute the philosophical dreams of others, or to establish any of my own. I am conscious, that even in this preliminary sketch I have been chiefly occupied in narrating facts, and teaching you how you are to observe, with simplicity

and truth, the ordinary phænomena of nature. But I shall no longer delay those practical lessons which are the chief subject of all my studies. From the principles which I have laid down may be safely inferred two conclusions of no slight moment: first, that growth being a process essentially the same in health and in disease, in a tumor and in the limb that nourishes it, every tumor (except in some cases of rare and unexpected changes of structure, or in the common accident of suppuration, &c.) will continue to grow while the blood circulates, and the body lives. Look well, then, to the nature and probable consequences of every tumor; for a tumor, though void of any character of peculiar malignity, will, if seated in the passages of the nose or the throat, on a bone, or in connexion with great vessels or nerves, have all the ill effects of a malignant tumor without being so, by bringing caries upon the bones, causing disease and ulceration in the nostrils, compressing the throat, and weaving in its roots with the great vessels and nerves; and from this universal fact results this incontrovertible rule of practice, "That no suspicious tumor, seated in a dangerous part, should be permitted to grow." Secondly, that almost every tumor, though seemingly indolent in its nature, has its period of ulceration. A tumor of mere fat, a tumor in which the adipose membrane is alone diseased, a steatomatous, or an ulcerous tumor, in which is collected an increased secretion, partly fluid and partly solid, or purely of fat, is indeed harmless, unless by its bulk and weight, and when it suppurates it suppurates mildly: but wherever any part of the body, except the cellular fat or muscular flesh is engaged in the disease, wherever the eye, the breast, the testicle, a

bone or a joint ; wherever, in short, any part, having a complicated structure, is affected, however long it may have held the character of a mere overgrowth or simple tumor, it is ever to be feared, that, sooner or later, its structure will undergo unfavourable changes, from long distention, from occasional excitement, from blows or other injuries, and from changes seemingly internal and spontaneous ; or, in other words, from physical causes which our patient has not remarked, and which we cannot trace. Thence results another rule equally established in my mind, that no tumor of a doubtful nature should be permitted to grow, even through that period in which it seems indolent ; for when it inflames or compresses the surrounding parts, when it is likely to suffocate our patient, or to end in a malignant and foetid sore, it is so fixed as to defy all surgery.

To establish these inferences by practical examples shall be the better occupation of our future hours of meeting, an occupation of infinite importance to our fellow creatures. A patient tortured with stone finds life intolerable ; one distracted with the pains, and wasted with the hectic attending a white swelling of a joint, is conscious of a decline of health, from which he can be saved only by parting with the diseased limb ; he puts life willingly to the hazard to save life, or to be relieved from pain ; but unhappily a tumor seems but no more than a deformity, is attended with no pain, and its dangers, whatever they are, are unknown to the patient ; he cannot even be made sensible of their approach, though his surgeon knows that the tumor, which seems harmless, is to bring on suffocation, caries, cancer, or some miserable form of death. By my manner of illustrating those principles,

and of relating the results of diligent experience, I doubt not I shall persuade you that I am truly “glad to teach, and glad to learn.”

DISCOURSE III.

OF TUMORS OF THE BONES.

“It is easy,” says Celsus, “in disputes of this nature, to maintain either side, and in those questions genius and invention will ever prevail; but diseases are to be cured, not by eloquence, but by medicines.”

The reproof which these memorable words are meant to convey, I hope I am intitled to inscribe at the head of this discourse; for it is not in speculation we have hitherto been occupied, and we now advance to scenes of real practice. The greatest excellency which in our science we can attain to, is to foresee every contingency, and provide against every difficulty; and our art, like every other, depends upon reasoning and precedents. Facts are the elements and integral parts of every science, and general theories, or rules of practice, are but the strong analogies and relations of those facts to each other. What has already been done we know we may again attempt; we believe we may favour those changes, or excite those actions to which, from the general course of facts, we see nature inclined: but however we may believe that our method of cure or projected operations will succeed, we cannot know that they will till experience gives us proof; experience of our own or

of others; experience of cases we have seen, or of cases we find recorded. While our art stands, like every other, on precedent, nothing but cases will illustrate cases, and of those which we receive as authority, and make the rule of our practice, we must have not the simple result stated, for no result is simple in the delicate and impalpable changes which the human body undergoes; we must have the narrative, the whole testimony, *vivâ voce*, the fact, and the manner of the fact; the patient, and his disease, his suffering, and his recovery, or the manner of his death, must all be presented to our imagination. General and independent rules, nay, even special facts, make but a slight and transient impression on the mind; but a faithful picture of the man and of his temperament; of the progress of his malady, and the degree of his suffering; of the manner in which he bears his misfortunes, and struggles through the disease, interests us for ever, and intimates to us what is going on within, and excites those reflections and conclusions, moral and philosophical, which, by habits of repetition, are combined at last into general rules. The conjectures which the intelligent physician forms in silence, while such a scene is passing before him, where first he imagines certain changes likely to happen, leaves his patient with presentiments of certain symptoms soon to appear, favourable or unfavourable, and returns to his bed-side, with a mind full of anxiety, to know whether his fears or hopes are confirmed, is truly experience: and when he takes his share in forwarding these operations of nature, and endeavours, by remedies, to anticipate danger, or to promote some favourable change, he performs the highest function of his profession, on

principles the surest and most philosophical. Much of this kind of knowledge may, I believe, be conveyed by narratives ; nor should any one be regarded as at all educated who has not his mind thus stored with facts.

I am persuaded that if cases are ever to convey useful lessons and documents to the young surgeon, their relation to each other must be founded on natural and obvious considerations ; the doctrine must be unambitious ; the truths that are to be impressed, useful and practical ; and the narrative, plain and simple, must be composed by one who, devoting himself sincerely to his profession, sits with equal patience by the bed-side of the poor and of the rich, and writes down with equal care what is wonderful and what is useful ; who is accustomed to put his own hand to the work, and something of his heart in every act ; who, having stood responsible and felt miserable, relates his hopes and fears, his success, and disappointments, and errors, with equal candour. In this at least I trust, all the narratives I shall now lay before you shall be found true and faithful.

The present discourse is devoted to the diseases of the bones ; and in consonance with the method suggested in these reflections, I shall first sketch out to you my conception of those changes which happen in the structure of bone, before it swells into a tumor ; and shall next lay before you the facts in detail, from which those conceptions, true or false, have arisen.

Every tumor must derive its peculiar form from the structure of that part of the body from which it arises ; for it is not seated on the part as a new and accidental existence, but is engendered by its vessels, and is of its actual substance. Many things conspire

to give the tumor proceeding from a bone a peculiar aspect; it is always irregular and anomalous, never simple. I have rarely seen a single bony protuberance arising from the head or the shaft of a single bone. When a bone falls into disease, a large proportion of tendinous and muscular parts, of bursæ and of cellular substance, partake of the morbid action. The bone lies in the centre of the limb, connected by its larger head with the joint, and by its periosteum with the tendons, bursæ, and muscles; and all this mass of parts is sooner or later affected; and since every deposition from vessels appointed for the secretion of bone is solid, and every increase of such a tumor permanent, it soon attains a great size; it is ponderous and massive from the proportion of bony secretion; and from the various structure of these several parts, it has every irregularity of form and substance.

When the tumor of a bone has attained a considerable size, much of the original structure is destroyed, and a new irregular mass of gelatinous and bony matter is substituted for it. The bony tumor is firm, bulky, and ponderous, but not solid; feeling it from without, we can conjecture of what substance it is composed within; we are sensible that the tumor is covered by a shell, bony in most part of its circumference, cartilaginous in some parts, and throughout the whole, yielding and elastic; we are sensible also, that within there are irregular points or spiculæ traversing the cavities or cells of the hollow tumor; that these are mixed with the cartilaginous substance, and with irregular collections of matter, partly purulent, but chiefly gelatinous; we are sensible of such soft cartilaginous and gelatinous parts being successively added, in the progress of its growth, to the

tumor, which was at the first solid and firm ; and we find at last, by pain and partial ulcerations, and by the increase of fluctuation and redness at particular points, that ulceration, the last stage of the disease, approaches ; then the limb is effectually ruined, and the patient must submit to amputation, or die of hectic.

When such tumor is dissected, we find our suspicions of its internal structure confirmed ; we see that foul matter flow out, when we open into the centre of the tumor, which we felt but indistinctly through its walls ; the parts which appeared the most solid are hollowed out by ulceration, and full of foul and putrid sanies ; while the bone has been declining into disease, the cancelli and marrow have been degenerating into a sort of fatty mass, with which much of the cavity of the tumor is filled ; and thence such disease has been very generally described under the name *osteosteatoma*. This fatty secretion, occupying the diseased cavity, is the part which, when the tumor bursts into open ulcer, throws out such prolific fungus, growing apparently from the substance of the bone, and sprouting up, when amputated, in the course of a few hours. The solid bone, whether radius or thigh-bone, is annihilated, and a mere shell of osseous matter substituted in its place, and that in a manner so peculiar, that it must seem to the unintelligent observer as if the small and solid bone had been expanded into an extensive and flat plate of osseous substance ; whereas the process is in truth very simple and very intelligible. The bone dies piecemeal of ulceration, or what, in technical language, is termed caries, and is conveyed away by absorption ; but the bone being dead, the surrounding membranes, viz.

the periosteum and tendinous expansions, which once formed a part of its system of circulation, continue still alive, and ready to secrete new bone ; and thus it happens that while carious abscess preserves a large cavity full of foul matter, the surrounding membranes continue secreting bone, which, like a shell, thin and expanded, covers this cavity, and forms the walls of the tumor, of which some part is composed of thin expanded bone, resembling a cranium, some of cartilage, some of thickened membrane ; and this shell is formed in proportion as the original fabric of the bone is destroyed.

Bone is destroyed by this internal absorption, just as it is by open caries, piecemeal ; the process would not be ulceration, if, while one part were perishing, the other were not active and secreting new matter ; so vigorous still is the general life of the bone, while the internal parts are thus suffering, that while one side is wasting with ulcer or absorption, the other side is often secreting bone irregularly and profusely, and shooting out into fantastic forms among the membranes and surrounding parts, whence the centre of the tumor is cavernous and cellular, and the walls often rough with spinous and projecting points. So merely local is the action of arteries in a tumor, whether osseous or soft, that one side, or part, or bump of a tumor grows visibly, and protrudes ; the features and external form of the tumor gradually changing, without any sensible cause ; and so peculiar is the secretion of each species of vascular structure, according to the original destination of the part, that in one part of a tumor is generated bone, in another gristle, in another gelatinous effusion ; while in another part, the vascular action is violent and destruc-

tive, and the solid bone, marrow, and surrounding membranes are all resolved into a foul and foetid supuration. From the periosteum is secreted bone; from the marrow, this steatomatous and solid fat, with which much of the tumor is filled; to the tendinous and aponeurotic parts we can distinctly trace the cartilaginous secretion; and the gelatinous effusions we can perceive, even during life, have their walls thicker or thinner according to the degree of inflammation.

These are the external characters and internal conditions of a tumor, occupying any of the bones. Such tumor arises often from a bruise or fracture; sometimes from a less obvious cause, or from internal disease. The radius, for example, is fractured at the wrist, reunites, and heals, but heals clumsily; the thickening never subsides, the pain never ceases, and though not great, is greater than what is natural to a fracture. At length a sensible tumor arises;—at first it is firm, but in proportion as it increases in size, it becomes somewhat soft and elastic: the thin plate of bone of which it is composed yielding to the distention from within.—From time to time the tumor changes its form, still increasing in bulk; on the side of the radius it is firm and solid; it bends and yields at the parts most distant from it; it is plainly bony at its basis, and as obviously cartilaginous in the extreme part of its circle; it plainly contains matter in those softer parts, where it yields to the impression of the finger: cartilaginous knobs arise, and sometimes are reddened on the surface; and at certain points the fluctuation is of such a kind as to imply, that the effusion is in part of a gelatinous nature. Thus the tumor grows and extends, with various

irregularities in form and consistence; it overhangs the dwindled hand, the use of the joint is lost, and the patient, who would gladly be delivered of it at an earlier stage, has in the end no choice left; for when once it bursts into carious ulceration it never heals, the foetor is inconceivably overcoming, attended with hectic. You are also to remark, that when such disease takes place in the hand itself, the joints of each of the fingers grow out into tumors, at first of a heart-like form, corresponding with the articulations of the finger-bones; but, in process of time, they grow to globular, irregular, and almost transparent tumors, still firm, or at least of a cartilaginous firmness. The whole hand degenerates into a deformed mass, discoloured, ulcerated, and foetid; from the individual knobs of which deformed mass, the points of the respective fingers project like griffin's claws, with crooked nails of enormous length.

You will conceive, I trust, from these general descriptions, an idea, not far from perfect, of the irregular forms, and internal disorder accompanying this disease: you may imagine how ill the surgeon is qualified for practice, who is not aware of these changes in the internal structure; he feels fluctuation, and, regardless of the history of the tumor, of its firmness, or of its connexion with a bone, plunges his abscess lancet into it, and it pours out, if he strike deep enough, a profusion of thick matter: he then believes that it will heal; but it will never heal. Or, knowing it to belong to the bone, he imagines, perhaps, that it is a firm and solid tumor, but believes that the tumor is moveable, because the radius moves along with it, allowing it to turn; he projects an operation for cutting off this tumor of the bone, but,

after a slow and painful dissection, he finds it not solid, but cavernous, and full of fatty or foetid matter ; he finds the bone, to which he imagined the tumor attached, entirely gone, and the joint to which that bone belonged entirely open ; he finds the smooth cartilaginous heads of the wrist-bones exposed in the cavity of the ulcer ; and is forced, after the patient has lost much blood, and manfully endured a slow excruciating operation, to cut off the hand. Such are the lessons which experience teaches, and I have known instances where the case and all its probabilities had been maturely considered, by men of great skill and judgment ; where a Lynn, surrounded by his approved and skilful friends, has reckoned the probability of success, such as to vindicate an operation ; the tumor small, firmly attached to the radius, turning easily along with it, not yet distorting the tendons, not yet interrupting the use of the hand,—I have known the operation, performed even by such an operator, fail. Now, in such cases, the tumor does not cease to grow, the incisions heal up, the part of the radius cut out by saws grows again, the tumor continues to increase, till it destroys the wrist, the hand dwindles, the fingers grow long, shapeless, and powerless, from want of use, and amputation is, in the end, the only resource.

The forms of this disgusting disease, which never fails to destroy the limb, are infinitely various. I have seen the ancle of a woman, from a very slight accident, fall into this disease ; the tibia and fibula grow into a common tumor ; the bones seemed to me annihilated, and a large shell of bone substituted in their place. The leg, in the course of the disease, twisted round in a singular manner, and the limb

enlarged to the size of the pillow of a settee. This woman died of hectic, from the open caries of the tumor. The wrist, more exposed than any other part to sprains and fractures, is, most of all, liable to be thus deformed and ruined; the hand itself is still more liable, the original injury is some slight blow or sprain;—one finger is first deformed, joint after joint enlarges, one finger becomes crooked after another, the nails project unpaired like talons, and force their way into the very flesh of the swelled and ulcerated hand, which they sometimes actually penetrate through and through; the hand degenerates into an unwieldy and irregular mass, studded with knobs and bony tumors. From a neglected fracture of the collar-bone, I saw once in a stout young man, who, living a most dissolute life, left the fractured part no rest to heal and unite, a tumor formed partly bony, partly cartilaginous, rising to the height of six inches, round, insulated, moving when the arm was moved, too large and too critically seated over the axillary artery to admit of extirpation, and which, I doubt not, has by this time become carious, and occasioned his death.

The stage and period of growth at which such a tumor may be extirpated, if ever such operation be practicable, I profess not to know; the circumstances must be very favourable indeed, to incline me to undertake such an achievement; it is often indeed a matter of doubt, whether it would be advisable even to amputate the diseased limb, for occasionally we see both hands thus diseased, and often the tendency to form such tumors seems to prevail through all the osseous system. If the disease proceed from a fracture or bruise, we cannot venture to extirpate the

tumor, for the joint is diseased, and we have no resource but amputation : if the tumor is spontaneous and without any violence or manifest cause, we have reason to fear it is a constitutional, and not a local disease, and dare not propose amputation with confidence ; it is only in the rare occurrence of a bony tumor being altogether limited in its growth, insulated in its form, solid and firm, and unaccompanied with disease of the surrounding parts, seated on the shaft of the bone, not connected with the joint, and yet growing to a great size, and threatening destruction, that we should think of any such operation. Such, perhaps, is a case recorded by Heister of a great bony tumor rising from the middle of the sternum, equal in size to a child's head, which was successfully extirpated.

[I have a skeleton, in which almost every bone, as the femur, tibia, ulna, humerus, clavicle, &c. has a tumor of bone or exostosis upon it : I have met with such cases in practice. Some years ago there was a remarkably good looking young woman, a patient in the Middlesex Hospital, who had these tumors standing out from the large bones. She was from the country, and had the usual deceptive appearance of exuberant health. In some places these tumors interfered with the play of the muscles ; in other parts the muscles pressed the nerves against the projecting bones, so as to produce pain and lameness. It was necessary to operate on several of these tumors, and the operations were successful. The operation consisted in dissecting off the integument and muscle from the exostosis ; then separating the periosteum, and taking off the projecting bone with the saw or chisel. I could not help saying at the time,

that they were like warts ; for the most rude operation, by exciting action, seemed to be successful.

But the question remains, to what is this disposition owing, and how is this disposition to form excrescence to be removed?]

The general description of this disease, and the chief practical lessons, will be as fully illustrated by the following case, as by a hundred such ; for it includes all the principal features of the disease, and all the practical difficulties, and is illustrated by a drawing.

“ A labouring man, about 40 years of age, sallow, lean, and meagre, presented himself with a tumor of an enormous size, and of an anomalous character, partly solid, partly cartilaginous, occupying two-thirds of the fore arm, from the wrist upwards : the hand was sound, and all its joints limber, the wrist bended, and the fingers moved easily ; it was from pain only, and weakness, and the incumbrance of so great a tumor, that he could no longer work : the tumor seemed also to move freely, whence it seemed possible to dissect it away, and save the joint ; and the surgeon, a man whom I respect as a man of learning, skill, and consummate prudence, was induced to begin a partial operation, a dissection of the tumor, from a sincere desire to preserve the right hand of a poor labourer.

“ But here you are to take notice (and I should put no value on a case which did not convey some practical lesson) how unexpectedly we are sometimes involved in great perplexities from reflecting too slightly on the nature of a tumor : a tumor of this singular complexion, any tumor indeed which requires an operation, should be so particularly exa-

mined, as to enable the surgeon to prognosticate every thing that could occur, and to describe the disease before amputation, as precisely as if it lay already dissected before him : much of what will be found on dissection may, in almost every case, be anticipated, and every such anticipation will be happy for the patient, and creditable for the surgeon. The surgeon should, at least, ascertain the general character of the tumor, yet, I question whether, in this case, it was absolutely known, that the tumor was at all attached to the bone ; that it was merely a tumor of the radius, assuredly not.

“ Little is be learnt, even after much inquiry, from those of the lower orders concerning the early stages of their diseases. This, perhaps, was of a nature originally malignant, but certainly irritated by neglect at first, and, in the end, by imprudent advice and rash applications : the man had, about six or eight months before applying for assistance, first observed the disease, in the form of a circumscribed swelling, rising upon his wrist, gradually increasing, and becoming daily more painful : he imagined it right to apply poultices, and, after some time, brought it happily, as he imagined, to a suppuration : but, as it did not heal, a mischievous old woman undertook the cure, cramming it with tents, and acrid and corrosive powders, and making so very free with the lancet, that he narrowly escaped dying of a hemorrhagy, caused probably by the erosion, or wounding of one of the veins above the wrist. The tumor was, at the time of the operation, enormously large (for the basis only of it is seen in these drawings) ; it was at the lower and bigger part of a dusky brown, but at its upper and smaller end of a fresher colour, with a wide and

open ulcer, bleeding at times, and disposed to throw out a luxuriant fungus, to suppress the growth of which was, perhaps, part of the old woman's intention, in applying the escharotics, if intention of any kind can be imputed to so ignorant a creature. The veins, as usual in bony tumors, were far from being conspicuous even in this part.

“ This poor man, having willingly assented to any operation, however lingering or painful, which might save his hand, the dissection was carried all round the tumor and into its central parts, before the surgeons present were undeceived. As the radius turns vertically like a spoke or spindle, it turns without any apparent motion, except in the parts connected with its lower end ; the hand turns freely along with the radius, so that we never suspect till we become acquainted with anatomy, that it is by the spoke-like motions of the radius that the hand moves ; it seems moveable in itself by its own immediate joints. This tumor, in like manner, moved easily, could be turned upwards and downwards, so that the surgeon never once suspected that the motion was in the radius, or that the tumor was fixed and made a part of that bone ; it seemed moveable, and doubting, he began to extirpate it, by drawing a long incision round its root, on the side of the ulna : but, finding it difficult, with this limited incision, to dissect the tumor, he prolonged the incision, continuing it over the back of the hand to the knuckles, in the direction of the extensor tendons. He then dissected more freely, and continued separating the skin from the tumor, till he came to a thick and solid sac, which seemed to consist of the muscular fibres and aponeurosis of the pronator quadratus muscle.

“ He continued this dissection, separating this thick and solid sac from the interosseous ligament, till he could go no farther ; finding that it terminated then in a solid and osseous basis, he now plunged intrepidly into the heart of the tumor. In cutting into the heart of the tumor he found that he had opened a very large sac, not firm only, but osseous : but still as he was penetrating into the tumor at one side, viz. at the side nearer the ulna, with which the tumor was manifestly unconnected, and at the greatest possible distance from the radius, from which the tumor in fact arose, he continued still unsuspecting, and persevered in dissecting away what he imagined to be a common tendinous sac, ossified only at certain points : he made thus a large opening into the tumor, felt its cavity full of loose and fatty bodies, pushed his finger under the extensor tendons into the deepest part of the sac, began to hook out the fatty tubercles with his fingers, and, at last, baling it out with his hand (for the cavity was large enough to admit his hand), hooking with his finger, and catching the fatty masses in his palm, he so far emptied the cavity as to be able to search with his fingers in every direction, and then he found, to his utter confusion, the ball of the carpus formed by the scaphoid and lunate bones, at the bottom of the cavity, bare : he was now, for the first time, undeceived, and knew what sort of disease he had to contend with ; he was now conscious that the radius was diseased, the joint destroyed, the original bone ulcerated and destroyed ; he felt distinctly that the ball of the carpal bones, originally opposed to the lower end of the radius, was now, by the destruction of the radius, left naked ; and, in fine, that the wrist-



Drawn by J. Bell.

Engraved by J. Bell.

joint was irrecoverably ruined. There was no going on with this operation, and no stopping here; he therefore explained to the patient, who had borne this severe and long protracted dissection with great composure, the necessity of amputating his hand, which he submitted to with equal resignation."

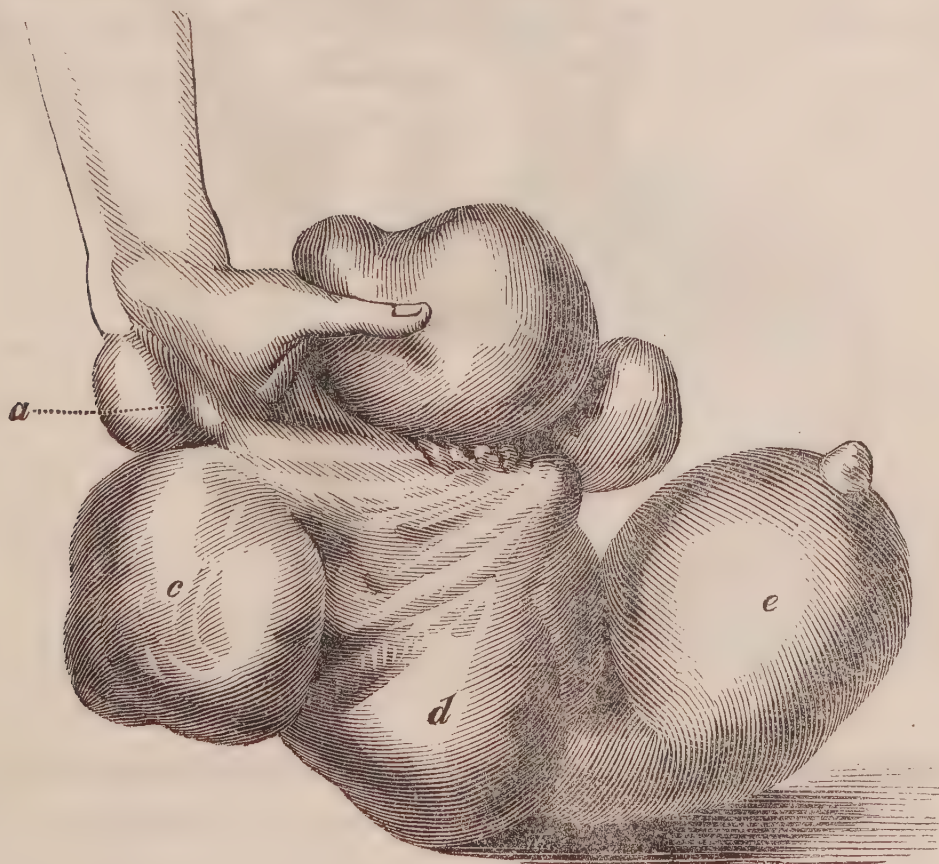
The reflections naturally arising out of this case are obvious and impressive; we must be conscious how suddenly a surgeon may, in a moment of thoughtless security, be plunged into circumstances extremely perplexing. How becoming it is to investigate and examine with care the history of every disease before operating, and to ascertain the soft or solid, the fixed or moveable state of a tumor, its probable connexions and eventual dangers: we should be aware of attempting (which is indeed equivalent to promising) to extirpate a tumor, which, though apparently moveable, is only seated on a moveable bone: we should be careful not to promise a cure where, perhaps, the joint is destroyed: not to enter upon a painful and exhausting operation, in a case where nothing but amputation can avail. In a case, such as I have just described, it should be recollected, that the metacarpal bones lie very deep in the hand, have a considerable latitude of motion, and may communicate that motion to the tumor; the circumstances of this tumor and its history were such as might deceive the most circumspect; the turning of the radius conveyed an idea of the tumor being moveable; the elastic and cartilaginous feeling, that it had nothing extraordinary in its nature; the sac, when the surgeon had dissected down to its root, was such as gave him reason to believe it was but in part ossified; the fat which he scooped out from its cavity, that it was merely a steatome; it was not till he felt with his

finger the ball of the carpal bones naked, that he knew the joint to be diseased; he had every apology for his mistake, for, in a disorder of no more than six months' duration, he had no reason to believe there could exist such universal destruction of the joint and of the radius.

The plate represents the chief circumstances of the disease.

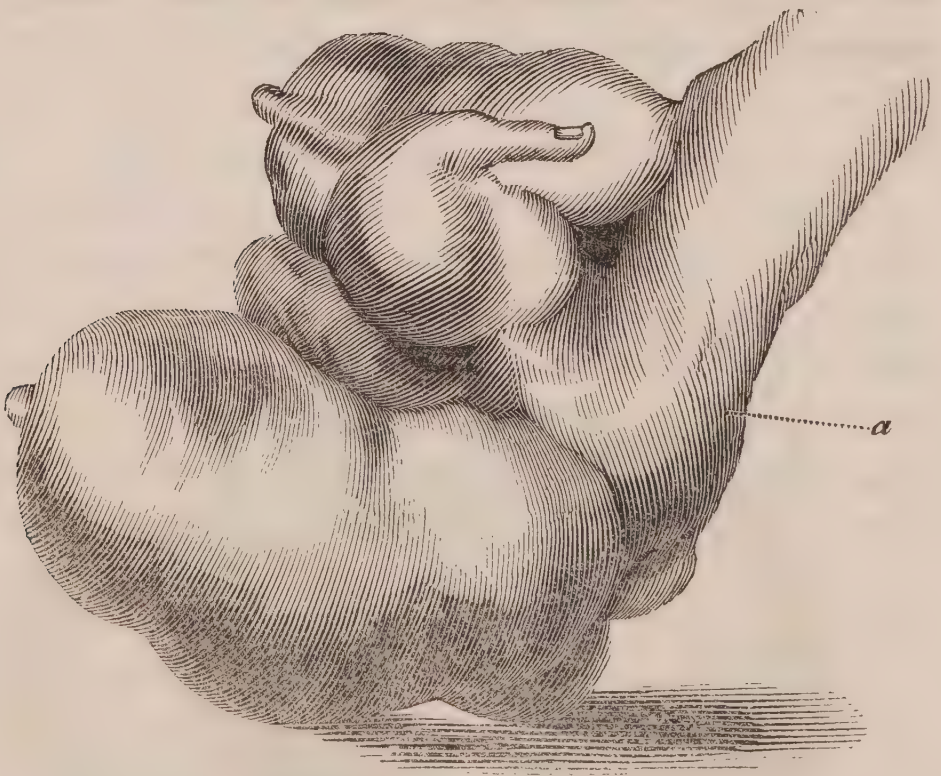
But a charitable endeavour to save the hand of a poor and labouring man, even when it involves us in a severe and fruitless operation, is not the worst error; the surgeon, alarmed by the uncouth appearance of a hand deformed by such disease, and not calculating with due deliberation the individual bones that are affected, might rashly amputate the whole hand, where a useful part of it might be preserved. Among the cases of this nature that stand recorded, is one by Severinus, short indeed, but not the less interesting: "Hieronymus Damianus, a youth about twenty-two years of age, crooked and scraggy, and of a puny habit of body, had his right hand so enlarged as to be a burden too great for him to bear: in lying, he laid it above his head; walking, he carried it with difficulty on his other hand: it was diseased, chiefly by the enlargement of the phalanges of four of the fingers; the individual tumors you would have likened, in respect of size, to lemons, in respect of colour, to rotten apples, being large, globular, and livid: these knobs, or enlargements, were plaited over each other, and the points of the nails projected like claws from the extremities of the several tumors." Men of ordinary genius and resources no sooner stumble upon a difficulty than they are alarmed, and fear magnifies every danger that is likely to affect their reputation or practice. Many surgeons, in a

case like this, fearful lest, after a partial operation, the disease should return, would have straightway chopped off the hand. Severinus acted quite otherwise: cutting off each finger by the last joint, by which it is united by the carpus, he burnt the roots, and brought the parts to a sound and healthy cure: he thus preserved the hand, i. e. the carpus and the thumb, the form, and something of the use of the part, for such a stump antagonising the other hand, and assisting it, would be very precious. Enormous as this tumor was, Severinus had the skill and courage to save at least the patient's thumb: and we have the consolation to learn, from the case of this unhealthy and crooked creature, plainly disposed to diseases of the bones, in whom the spine was deformed, and the tumor of the hand spontaneous, that it is possible, even where our incisions can hardly carry us beyond the immediate limits of the disease, to accomplish a cure.



In the sketch of this hand, you will remark, that the bones are alone diseased, that the several knobs or tubercles represent the several phalanges or joints of the fingers; that the hand and wrist (a) are dwindled, while the tumors (c d e) represent the several joints of the ring finger, which had far exceeded the rest in size, forming the chief bulk of the tumor: the elongation of the whole hand demonstrates the growth of the bones in every direction.

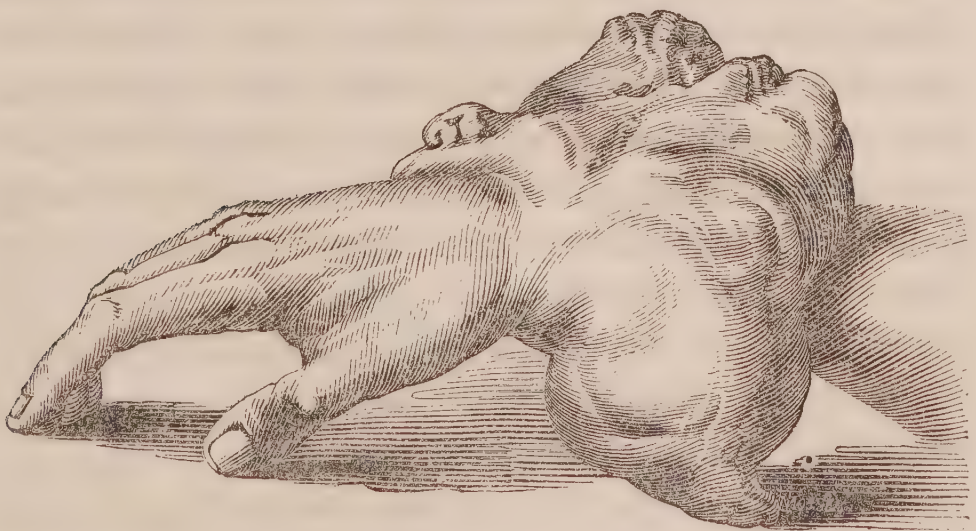
But extension such as this, especially when proceeding from the high action of vessels, must end in ulceration, which is the natural conclusion of the disease. The ulcer is foetid and carious, affecting at once the bone and the flesh, and so ruinous to the health that amputation cannot be delayed. Such, for example, is the case communicated to Severinus by Larchæus, accompanied with a drawing. It seems to



have been a tumor of enormous size indeed, involving all the carpal and finger bones, very massive and

tuberculous, the hand weighing no less than seven pounds; the bones were thoroughly diseased. This irregular mass breaking out in its centre (in the middle of the carpus) into ulceration, destroying not only the fleshy parts but the bones, there ensued a hectic fever, when the man betook himself to the hospital of St. James's for incurables, and solicited to have his hand amputated, which otherwise he would not have parted with, for he was a pauper, and lived by exposing this monstrous mass of disease.

So desperate do I account this kind of tumor, when accompanied with any general disease of the bones, and so loathsome are the carious ulcers which sooner or later ensue, that I always think it a consolation when the disease is in any degree local, even though it admit not of saving the hand by any partial operation; if it allow of our saving the patient's life by amputation, I think it a special piece of good fortune. How little it was in our power to save the patient whose wrist is drawn here, you will perceive from the following notes of his case :



“ His wrist is deformed and loaded with a tumor,

or rather a congeries of tumors surrounding the joint, knobby, hard, immoveable, of a rocky firmness, and plainly proceeding from the bones, both radius and ulna: the arm is weakened by the tumor, the wrist almost powerless, the hand dwindled from want of use. The man is about twenty-six years of age, a weaver by trade, born with this disease, and now in a condition which hardly admits of any alleviation. This tumor of the wrist was observed even at his birth; it was then very small, and waxed slowly and gradually to its present size. From year to year the tendency to disease became more and more conspicuous; tumors successively formed on various parts of his body. The bones of his fingers, ribs, legs, are deformed with tumors of the same rocky firmness; one of these, arising from one of the ribs, is of a most singular form, projecting from the flat rib like the handle of some instrument, and sticking directly out. These various bony tumors, which have appeared in regular succession, and grown slowly, have been hitherto void of pain, and have never yet prevented his daily labour; but during the inclement weather of last winter, and taking mercury for a slight venereal affection, the tumors on the left leg, whether from the imprudent administration of the remedy, or some lurking taint of the disease, became so extremely painful, that he was disabled from work, confined to bed, and is now in the infirmary. The papillæ, or prominent parts represented in the drawing, are the apices of those rocky and firm tumors, which are somewhat pointed; and each prominent point is discoloured, so as to assume the form of a common pimple, but very fiery and red. The painful tumors of the left leg are in like manner reddened; the

whole skin investing them is inflamed; the complexion, in short, of these tumors is such, as demonstrates the approach of that ulceration, which is to convert each tumor into a loathsome, foetid, and carious sore."

Though I have upon my recollection many proofs of tumors of this nature being altogether void of pain; yet I have a prepossession, that wherever there are acute pains in the bones, there is a tendency to such tumors. "John M'Donald went early in life an apprentice to the West Indies; he was then a stout young man, and in his profession as stonemason had a gang of workmen under his charge; and during a period of ten years which he spent in that climate, had suffered no less than ten successive and severe attacks of fever and ague, and had suffered much from dysentery. He is married, and has been so many years; he is a sober and respectable man, apparently fifty years of age; never had venereal complaints, never had general rheumatism, nor indeed any other pains in his bones, but that which I am now about to describe.

"He had suffered very violent pains about his shoulders and arms, but especially in the left shoulder-bone for the space of a year; those pains had in some degree ceased, and the pain in the left arm had been little distressing for three months, when one day, at a quarterly meeting for the regulation of a common subscription fund, or society subscription for the relief of distressed members, a little girl of five years old, being in the room, he lifted her over one of the benches, and in the moment of doing so, felt a pain so sudden and acute, that he could not be persuaded but that some one had hit him a smart blow from behind,

across the arm ; he spoke, he says, very testily, and could not help crying out, that by that silly trick they had raised his old pain, which instantly became more violent than ever. From that moment he was incapable of raising his arm to his head ; his pain, upon every occasion of coughing, laughing, or moving hastily, is excessive : but when at perfect rest he has no pain. From this period a swelling begun to arise, occupying gradually the upper and middle parts of the shoulder-bone, surrounding it like the lump of clay and straw which is wrapped round a grafted tree. In this very singular case, I have little doubt, that the fibres at the origin of the triceps and insertion of the deltoid muscles had given way, in consequence of the diseased state of the periosteum, and tendons, where they are implanted into the humerus, and that from such injury the tumor had arisen ;—the bone, I doubt not, is carious within, supported only by this shell or new secretion ; I could bend the arm gently, and could perceive that the sac of bony secretion, which at first seemed perfect and firm bone, is in part cartilaginous, and yields ; the arm bends at this thickened part with a sort of elasticity. Having one day committed his arm for examination to a very brutal surgeon, and turned to go away while he was thus employed, he called me back, with great exultation, to show me, that he had been able to bend my patient's arm to an obtuse angle, so as to put the fact of the separation of the bones, and the flexile and elastic nature of the tumor beyond dispute ; a favour, which I acknowledged, I fear, in a very ungracious manner."

I have given, along with the drawing of the wrist of the man whose whole osseous system was dis-



Fig. 2



Fig. 1

eased, one from Mr. Mery, of the hand of a youth of sixteen, which had attained to a prodigious size and monstrous form ; it weighed, after amputation, from six to seven pounds ; it was one deformed mass, consisting of three protuberances of various magnitude ; the largest (a figure 1.) belonging to the ring finger, appeared chiefly on the back of the hand, and was seven inches in diameter ; the tumor next in size (b), proceeding from the mid-finger, was six inches in diameter ; that proceeding from the little finger was four inches in diameter, and is seen only in the second drawing, viz. in the skeleton of the hand at (c). The skin, wherever it lay over these tumors, was coarse, with deeper ridges : the surface was deformed with deep ulcers, affecting not the soft parts only, but the bones : though from the unsightly appearance of the whole mass, it was by many pronounced cancerous, yet these sores were in truth red, granulating, and healthy ; even the deepest of them were void of pain, and the veins of the hand, usually swelled in cancerous tumors, were flat. Through the skin, which was thin from extension, the tumors felt very firm and osseous ; the lad assigned, as the cause of this monstrous deformity, the hand being bruised at the early age of six years : he was entirely well of this hurt before the hand began to grow, but it began soon after the ulceration healed to increase in size, and continued to enlarge for ten years. The hand, he had remarked, during the two latter years, had grown more than in all the eight preceding. Upon dissecting the amputated hand, the tumor was found to lie exclusively in the bones ; the greatest tubercles were merely enlargements of the first and second phalanges of the three last fingers ; those joints of the

forefinger and thumb being sound. The joints of the fingers, in this instance, at the same time that they were enlarged, were motionless from being ankylosed; but their articulations with the metacarpal bones were fixed, only by the rigid state in which the tendons were, from motion being so many years suspended. The shell of these tumors was thin; the internal parts crossed by bony fibres, cellular, and cavernous, were filled with a juice resembling the jelly of meat in colour and consistence; and it is singular, that the carpal and metacarpal bones being but slightly affected, and the extreme phalanges on which the nails are implanted entirely sound, the intermediate bones were enlarged to this prodigious degree. One only of the metacarpal bones, that, viz. which supports the mid-finger, was diseased, and so far enlarged as to be an inch and a half in diameter, studded with some small tubercles, and exposed in part by carious ulcers. The carpal bones were perfectly sound.

There is no case from which some lesson, more or less important, may not be deduced: all this description is interesting. The two drawings represent, 1st. the deformed and foetid mass, the enormous tumors, the roughened skin, and the ulcers penetrating into the cavities of these tumors. 2d. The skeleton of the hand, exhibiting the respective tumors of the middle ring, and little fingers, and the heart-shaped enlargement (c) of the metacarpal of the middle finger, is also singularly interesting, demonstrating that the whole tumor is bone, permanent and firm, and not an expansion of the phalanges, but a new secretion. The bone of the forefinger was not so much diseased as deformed, dwindling in size, and bending into an arch, under the pressure of this

tumor : the thin shells of bone, the cancellated texture of the tumors, and the carious openings, are also well represented.

This case brings an important practical question to a very short issue ; for these drawings prove the local nature of the disease, viz. that it is merely in the bones, always in the heads or softer parts, that the disease is seated ; that the phalanges of the fingers, which are peculiarly spongy, and the lower heads of the radius and ulna are most liable to disease. Mery confesses (without being conscious how far he was in that case to blame) that one half the hand was apparently sound ; and that, upon dissection, the finger and thumb were found in their sound and natural state*. How then can we acquit him of rashness in smiting off the hand of a boy of eighteen years of age, with youth and health on his side, and all the world before him, when, by a less painful operation, he might have saved his thumb, forefinger, and wrist ? Surely we may pronounce him wrong, if there be one word of truth in this case of Severinus, when the thumb and forefinger were saved.

Of the various questions which cases of this nature suggest, there is one which I am almost afraid to investigate. When in an adult such tumors appear, we have reason to hope that they may be local, and that, by cutting out the bone, we may extirpate the disease. Even when such tumors grow at once on various parts, we may, by circumstances, be induced to extirpate the individual tumors, and cauterize their

* Cependant la moitié ou environ, en paroissoit saine exterieurement, et le Pouce et l'Index dans leur état naturel.

roots ; but what shall we do when, in childhood, the disease manifests itself in various parts of the osseous system ? when all parts of the bones seem (like the cellular fat of some diseased people) disposed to excrescences ? When tumor after tumor appears in quick succession ? and the fingers, the hands, the wrist, the elbows, the toes, the tibia, become affected ? when both hands are crooked, like griffins' claws, in every finger ; and when the arms and feet begin to be deformed ? Shall we remain spectators of the ruin, joint after joint, of a fine healthy boy ? shall we calmly look on till each tumor has acquired its utmost magnitude, suppurated, and burst into that state of loathsome caries which must close the scene ? or anticipate this inevitable termination, amputate and cauterize those tumors, and eventually subject our art to discredit, and ourselves to the personal reproach of trying rash, severe, and yet lingering operations ? Although, in a situation so hopeless as that which I have described, we must be sorely tempted, I yet fear there are occasions in which duty and charity will incline us to refrain. It will not, gentlemen, be un instructive to you, if I at once represent the shape in which such perplexing questions will present to you in the course of practice, and something of the manner in which, according to my conception, they may be discussed, and the prognostic so framed, as to be not inconsistent with truth and good faith, yet such as to reconcile a patient, by slow degrees, to a misfortune which cannot long be concealed.

The father of a very fine boy, whose subsequent fate I need not mention, addressed me many years ago in the following terms :

“ Sir,

B ——— Westmorland, 1795.

“ It has been the misfortune of this circle of the country to have no professional gentleman residing in it, for thirty years past ; and in cases of imminent danger, where there is a necessity of calling one from a distance, the suffering person is either dead or recovered, before he can have assistance. The anxiety and distress of mind occasioned in families is great ; and alas, there appears no prospect of our being relieved from it. The difficulty of procuring a medical friend, to narrate the case I am now to submit to you, makes me undertake a task, to which, from want of professional knowledge, I feel myself inadequate ; but I hope, and believe, one of your abilities and practice will comprehend my meaning, however simply or awkwardly expressed. A boy of mine, now six years old, was observed, at the age of two years, to get small lumps at the joinings of the fingers ; I applied early to the nearest professional man, and had his case represented to gentlemen of eminence in Carlisle, and elsewhere ; some recommended one thing, some another, but, in general, they agreed in thinking, that a regular and continued course of sea-bathing would in time correct, if not repress entirely, the growing tendency of these excrescences. Flattered with these fond hopes, I took no care in seeking the advice of any more eminent men, for directions how to treat my dear boy, or bringing him personally to them, if a sight of him was deemed necessary : but finding these lumps growing faster and larger every day he lives, I am constrained to lay his situation before you.

“ There is in the hollow betwixt the fore and mid fingers a round lump, of the size of an egg, not of a

fleshy, but of a hard bony substance, rather more glossy in its colour than the other tumors on the same hand, but not sore to the touch. This bump, together with the lesser ones by the sides of the fingers of this hand, has reduced his little wrist to a diminutive size ; and I now find, that from the wrist to the elbow, there is a like hard substance growing along the bone on the outside. The fingers of the left hand are all affected ; but the growth runs along the fingers on each side, more especially betwixt the middle joints, and what we call the knuckles, and there they have waxed so broad, as to make the points of the fingers spread as far asunder as he could separate them if they were sound. All the joints are free, and it is astonishing to see how nimbly he uses them, in every little exercise he goes about : he never complains of uneasiness or pain arising from these overgrowths, but is now so sensible of the singularity of their appearance, that he would fain conceal them from strangers.

“ How to account for these excrescences we know not, or to what cause to assign them ; that I leave to you. Some have imagined them to be of a rickety nature : rickets, it is true, must, in every family now subject to them, have begun in one individual, and from causes to which every other family may be subject : but no child connected with him by father or mother’s side has for many generations, that we can reckon back, ever had the smallest disposition to this disease : would you, sir, not suppose, that his spine, or breast, or other parts of the body (had his complaint been of a rickety nature), would have been early affected ? His body and limbs are altogether free from disease, a small bump excepted, which ap-

pears on the sole of his left foot. Others imagine his disease to proceed from foul milk: he had two nurses, the most likely young women we could find; the first had a flux (menstrual) for which we dismissed her in the sixth week, but she who succeeded was a fresh and healthy young woman, suckling her first child: she had changes too, which she concealed from us, and gave some weeks of *foul milk* (this, it would appear, is a term appropriated to that milk which a woman gives while menstruing); but her child, and that of the other woman, are stout, healthy, and free from blemish. My boy is so too, in every other respect, and till two years of age, never was there seen a child more perfectly the picture of health. Others ascribe his complaints to cold, while he was an infant, for his second nurse delighted in carrying him abroad in all weathers. Others again ascribe it to overstraining his tender sinews, his nurse having, from vanity, encouraged the little creature in crawling through all the rooms on feet and hands, when no more than six months old. Whether any or all of these causes have conspired to produce the disease, you will best judge; my children are very numerous, and now grown up to be men and women, are all of the most healthy complexions and constitutions.

“ I have been very particular in relating every appearance, and every supposed cause; in any thing which you may find defective, I beg you will question me, and I shall endeavour to satisfy you; and if all will not do, shall be ready to bring him to you, however inconvenient it may be from so great a distance. I wait anxiously to hear from you, and to receive whatever medicines and instructions you are pleased to send us.”

When this boy was brought to us, we had the mortification to find a very fine lusty and thriving creature, with a full habit, strong limbs, and a very intelligent, interesting, and cheerful countenance, ruined by a disease apparently local. The hands were greatly deformed, growing into mere knots and tubercles, with distorted and dwindled fingers projecting from them like claws; the wrists were dwindled, the radius and ulna of both arms deformed, knotty and small; one large tumor projected from the knuckle at the root of the forefinger of his right hand, beginning to be discoloured, and threatening ulceration at no distant period; one foot was already diseased, having a tumor projecting from its side, from the metatarsal bone of the little toe. Every part of the bony system was to be suspected, and in some places I think bumps and tubercles were already perceptible. There seemed in truth but little hope of any remedy, or any accidental change in the system arresting the course of this terrible malady, till every joint was successively ruined and deformed. There was little else to be observed, which may not be learned from the drawing. The disease was plainly and exclusively in the bones, which were alone enlarged, and chiefly in their spongy and vascular extremities. The respective tumors correspond in number with the respective joints, each joint of each finger being affected; in shape, the several tumors corresponded with the shape of the phalanges or finger-bones, for every tumor was of a heart-like form, small at its apex, and bulging into two round heads, corresponding with the two processes, or little round heads of the joint, each finger turned away from another, as the corresponding tumor impelled it, so

that they were not only crooked, but plaited over one another. The smaller tumors were firm and bony; the larger soft, and more elastic; each tumor, whether firm or soft, was transparent; the larger apple-like tumor on the back of the right hand was especially so, being as transparent as the freshest egg. The hands resembled the grotesque claws of a griffin cut in stone, the knobs or tumors resembling the round claws, and the dwindled fingers the projecting talons*. There was no sensibility in those tumors when pressed; no pain, night nor day; there was indeed no destructive vascular action, nor change of structure in this disease, nothing but irregular nutrition, in which certain parts of the bony system increased, seemingly at the expense of the adjoining parts; the augmentation of nourishment being produced by an increased vascular action very little different in degree, and not at all in kind, from the natural one. In this poor boy I knew not how to resolve. To extirpate these tumors with the knife, and cauterize their roots, would have been a most extravagant undertaking; while one tumor was reduced by a cruel process, many would have grown; it would have been an endless work. He was yet a child with all the growth of his bones before him; during the fifteen succeeding years in which his bones were to continue vascular and growing, what likelihood was there that this disorder should cease? If we were at a loss what to prescribe as essentially useful to the boy, we were infinitely more perplexed how to write so as to disclose any part of the truth, or reconcile a parent to a situation so afflicting.

* *Vel monstrositas belluarum secundum digitos nodis, quos sepulchralibus urnis sculptores appingere consueverunt.*—SEVERINUS.

Not trusting to conversation, we wrote again in the following terms. “The consolation, dear sir, you must feel, in having brought your boy far from home for our inspection, is neither slight nor transient; his situation is very impressive, and you are sure that we cannot reflect on it without every humane desire to search for whatever precedents the records of our profession may contain, and to consider the whole course of his disorder with a deep interest. We shall direct our attention to every thing which may serve to suspend the disease; that indeed is all that we can hope for; but we hold it a point of duty not to conceal entirely our presentiments. Once informed of these, you will be reconciled to the dispensations of Providence, and inclined to wait in patient expectation for the changes which future years may bring on. You have above all the consolation of having done every thing in your power for your boy’s safety. We fear you came from home with the better hope of some local remedies, or partial operations of the knife or caustic being proposed. You are now to make the first trial of your constancy, by submitting to the trial of general remedies, which promise nothing more than to suspend the disease, or interrupt its progress. Should it stop, and the present tumors only remain, they might be successfully dealt with, but nothing recorded in our profession entitles us to promise this.

“To you, as a father, we think it a duty to disclose the truth, especially since the disease is not one that involves the life of your boy. There are, in the records of surgery, but too many cases parallel, in many points, with this of your boy; but not one from which we can infer any conclusions of a consolatory nature.

From an author who had particularly studied the subject of tumors, we have a drawing of a disease of this nature, but so far local, that in extirpating the tumor, though of enormous size, and very grotesque in its form, he saved almost half the hand. Another case was transmitted to the same author by a friend, which had grown from very early life, being occasioned, as the boy's parents told him, by the bite of a sow. A third is related in the Acts of the Academy of Sciences, occasioned by a bruise. The hand of the boy having been crushed, the intumescence began from that period, and continued augmenting for ten years. Others are related by Vanderwiel and various authors, many accompanied with drawings of deformed hands resembling those of your little boy ; yet we cannot avoid calling your attention to that which makes the unhappy distinction betwixt this and former cases. In those the tumor was limited, the cause was an external injury, the disease local, and yet amputation was, in all those instances, allowed to be the only resource. We learn from those authors little but the name, if that could be a matter of consolation, by which we are to distinguish an incurable disease ; they have called it the *atheroma nodosa*. Our private experience is still less consolatory. We have very often found the disease constitutional, and have no reason to believe where, as in the present case, the tumors are numerous, where not an injured hand or knee alone is diseased, but many of the bones, that any partial operations, or even that of amputation, can be useful. Do us the justice to believe, that no fear of discredit prevents us from attempting whatever science or experience might dictate ; that if we speak or act with any appearance of hesitation, it is

from the peculiar difficulties of the case, or from respect to your feelings. Our most sanguine hopes are bounded by the expectation (not very sanguine) of limiting, by medicines or regimen, the ultimate size of these tumors; to arrest their growth altogether; to lessen or discuss the solid matter already accumulated is, we fear, beyond the reach of art. Leaden compresses, firm bandaging, stimulant embrocations, and restringents, might perhaps be suggested, and they have, we believe, been mentioned to you; but we are averse from the use of stimulant applications, which, as they could not destroy the parts, would, by exciting them, increase the secretion of bone. Had there been only one solitary tumor, however large, resembling that on the knuckle of the right hand, we should have thought ourselves vindicated in cutting it out. Had there even been various tumors of this description, we should have ventured to amputate them, and cauterize their roots, at the risk of having rebellious ulcers to contend with. Neither the reproach of cruelty, nor the long continued and repeated torments we must have inflicted before we could have accomplished such a cure, should have discouraged us; but the hands being beset with tumors, each bone of each finger grown out into a deformed knot, and both hands being diseased, make every such attempt hopeless. The metacarpal bones too, or those on which the fingers are implanted, are variously enlarged; the wrist is dwindled, and the joint at this part, and even that of the elbow, deformed. A person of your education and good sense, a constant and anxious spectator of these growths, must know too well how little we dare promise, and take our prescriptions as well as our opinions with

those reservations which must ever, in these circumstances, necessarily accompany them. We know, that after long observing this disease, you have required our advice, not with any sanguine hopes of a cure, but with a becoming resignation to the dispensations of Providence, and with the intention of acquitting yourself of every duty to your child."

The rapid manner in which bone is secreted and accumulated to an astonishing bulk is one of the most singular phenomena that occurs in the living body. The instance I am now going to relate will, I am sure, appear surprising, but it is selected for a far better purpose, to serve as an example of the difficulty we sometimes find, in saving the patient's life, even where the disease is local, and growth of bone sensible and rapid. I fear too it is one of a thousand examples, of a man lost in the prime of life, and dying a most loathsome and miserable death, from the reluctance of the surgeon to charge himself with the fate of such a patient, or to predict the future consequences of a tumor while it is yet small. It is the case of a young man, "committed to my humanity and skill" by Dr. Forbes of Inverness; and, I hope, he added this latter qualifying expression, from a consciousness, that, before the patient could be brought to me, he must be beyond the reach of surgery.

Alexander Macdonald, a Highlander from Fort Augustus, a tall and handsome lad, passing six feet in height, and uncommonly athletic, was put to the Perth Academy for his education in writing, book-keeping, and such other parts of learning as might qualify him for a counting-house; it was intended to send him to America a clerk to the North-West Company in the fur trade. In running violently at tennis,

in the academy green, he fell, and hurt his shoulder: it was such a bruise as often happens from a fall, without entailing the slightest ill consequence, beyond the first pain and swelling: the skin was blackened by the bruise, and the joint was sprained; he had excessive pain along the whole arm for twenty-four hours, but it vanished gradually: he imagined himself well; he had recovered every thing but the strength of his arm; but after the violence of the pain (which lasted no more than twenty-four hours) was gone, such weakness remained, that though, from his great strength, he could lift perpendicularly such weights as others could not move, yet he could never raise his arm to his head.

I was at pains to question his father, a respectable old man, concerning the part which received the injury; and he clearly and decidedly affirmed, that it was not the shoulder-joint, but the middle of the bone of the arm that received the shock, it was along the whole of the arm that he felt the pain, and could distinguish the marks of the bruise. The pain had, after its first violence, totally ceased, as if the part had sustained no permanent injury, and he believed himself well; it was exactly at the end of a month that the pain returned, and fixed in the joint, with a very distressing sense of weakness, so that he could not at all raise his arm; if he meant to put on his hat with it, he had to raise it with the other hand, and when thus raised, if he lowered it again without support, the moment it fell unsupported below the level, it descended like lead. Still he could lift perpendicularly a very great weight; but from this second period of pain we must date the disease. The whole arm swelled, but especially about the shoulder; his

cries and shrieks were wild and melancholy : living in a remote part of the highlands, it is natural for the father to express himself in the following words, which he invariably uses when I question him in regard to the degree of pain,—“ Sir, there was no hour of the night nor day in which you could not hear his wild cries miles off.” He represented the particular pain by saying, it seemed as if he had been bored with hot irons ; and his cries were so unceasing, as well as so piercing, that “ though they lived in a very long house, they had no sleep from this time forward.”

That such had been his condition no one could doubt who saw him before his death ; for the swelling kept equal pace with these dreadful sufferings : at first the arm seemed chiefly to swell from the shoulder-joint ; gradually the whole arm swelled, and the forearm and hand dwindled. His body, before lusty and strong, was wasted with the agony and want of rest. Yet even at this time, when the arm was monstrously swelled, and before it was entirely oppressed, or the forearm wasted, he could lift as heavy a weight with the left arm as with the right ; and even to the last stage, that in which I saw him, his hand was strong to grasp. In the first four months, the upper part of the arm had so increased in size, that the prominent part exceeded the size of his head ; but now, at the end of nine months, it greatly exceeds in size his emaciated body.

When I went to receive this poor lad, I found him lying deep in the hold of a small sloop, in which he had been transported from Inverness, laid on a coarse mattress, and bolstered up against the shelving side of the vessel ; and when the clothes were lifted, I solemnly declare, that I hardly knew, at first, what it

was that I saw, which was the tumor and which his body, or how to connect in imagination the one with the other. He lay in an inclined and irregular posture, extremely languid, and hardly able to articulate; his head inclining to one side, the tumor, when first exposed by lifting the clothes, might be mistaken for his body; in respect of size, it was of a suitable bulk; and when the lean, yellow, and emaciated thorax was next exposed, the tumor seemed so much to exceed it in size, with a shining surface and brilliant colour, that at first I was more confounded than shocked, so impossible was it, in the first moments, to consider of it as a tumor, or to see its relation to the arm. The fore-arm was dwindled and shrunk, and projected from the tumor at a strange and unnatural distance from the shoulder: the veins were swelled, like those of a horse's belly: large fungous tumors, as big as oranges, projected in a group from the outside of the arm, at the place where, about two months before, a large abscess had burst; and such was the foetor of the matter running from under these fungi, and the languor of this poor emaciated creature, that I had no thought for the present but how to get him conveyed alive to town. After a few days, when he was somewhat recovered from the fatigues of his voyage, I proceeded to write down the history, and examine the actual state of this tumor. I found it throughout solid, perfectly solid, consisting chiefly of bone, little cartilaginous; hardly in any part elastic or yielding, and discharging matter, not from any superficial abscess, but apparently from the centre of this enormous mass. I had every reason to believe, that the bone and the joint, which certainly were neither broken nor dislocated, had been generally injured, not merely

by the shock, but by the bruise: that the parts nearest the bone, and connected with it by the periosteum, had been bruised and inflamed: that the extreme pain for the first twenty-four hours indicated only the violence of the immediate injury, but the slow vascular action which succeeded, at the distance of a month, proved how deeply the circulation of the bone was affected, and caused that osseous secretion which generated this prodigious shell of bone; while the shaft of the shoulder-bone, from the periosteum of which this callus had been secreted, was in part destroyed by an ulcerating process within: that the ulceration, deep seated, not only in the bone but in the joint, occasioned those excruciating tortures which were announced by wild and desperate cries night and day: that the matter bursting at last through every obstacle, had made its way through that ulcerated part of the surface, which is studded with the fungous excrescences represented in the drawing.

This bursting out of the matter brought relief from the pain; he now lay in a state of extreme languor, moaning and slumbering; you found it painful even to question him, he was so feeble; he fell, after a few broken answers, into a slumber of mere debility, and closed his eyes as exhausted; and while I took the sketch of his posture, and of the proportions of this prodigious tumor, he slumbered continually. His extreme weakness precluded every practical experiment, and left for our discussion the speculative question only; “In a case so deplorable and hopeless, what should we have done at an earlier stage, when the patient’s strength was more entire, and youth and vigour (for he was but twenty-one years of age) on his side?”

Here, for the first time, I felt that a bony tumor might, by advancing to the trunk of the body, preclude amputation as entirely as aneurism of the subclavian artery! That the question here to be resolved was not, whether we might dare to amputate at the shoulder joint; the question was of amputating the scapula also, and along with it a tumor, exceeding in size even the trunk of the body! and the accident mentioned by Cheselden (an accident which has often happened since), of Wood the miller, whose arm, scapula and all, was rudely and suddenly torn from his body, could not but come into our recollection. There was hardly left us even a choice, to exercise our discretion and skill upon; for, from the state of the veins, large, tortuous, and already ulcerating, and so numerous as to give a livid colour to almost all the surface of the tumor, it was plain, that he was in daily peril of hemorrhagy, and that this was at no remote period, certainly within a few weeks, to put a period to his life! Could there then be a question, whether to wait in fear of that hemorrhagy, which was assuredly to end in death, or to risk, by operating, that hemorrhagy by which he might be saved alive? For my part I had not the shadow of a doubt. What should determine us, in any desperate case, to do desperate things? Surely the possibility of safety through operation, the certainty of death! I saw it possible, by tying first the subclavian artery, the root of all the circumflex arteries of the shoulder and scapula, to prevent any alarming degree of hemorrhagy; by sawing across the outer end of the clavicle to get command of the scapula, and turn it back, as easily as the flap from an ordinary stump; to tie, when it was cut, the arteria

transversalis humeri, and certainly to separate the whole, without immediate death. But had this been an enterprise as certainly fatal as the Cæsarian section itself, still it gave some chance for life. Confident in the justness of this reasoning, moral and physical, I should have urged him to this awful trial, and devoted myself to the task; but he was sunk too low for any trial, and to be regarded only as an object of charitable care. He died in the Royal Infirmary of hemorrhagy, about three weeks after his admission, and these are the notes of the dissection.

DISSECTION, JULY 13th, 1806.

“ Having divided the integuments, which were extremely thin, we found, on attempting to cleanse the tumor from one extremity to the other, that it was of a substance much resembling callus; in many places it was so firm and solid, that after trying in vain to divide it with a strong knife, we were obliged to betake ourselves to the common amputation saw.

“ The cells of this bony tumor were every where filled with a matter resembling thick cheese; the tumor itself, from its great size, and the entire appearance of the os humeri, seemed only to be attached to that bone; but upon a more minute examination, was plainly a production from its substance. The shoulder-bone could be traced through the whole tumor; but enlarged, spongy, and ulcerated. The upper part of the scapula, the acromion process, and the outer end of the clavicle, could, during life, be plainly distinguished to be enlarged, and to form part of the tumor; and upon dissection, all the bones

forming the shoulder joint were found to be deeply diseased. The upper and most bulky part of the tumor seemed to proceed as much from these as from the os humeri, and the joint was completely anchylosed."

There is a period in every such case, when the tumor being still of moderate size, and yet requiring an operation of the most desperate and unprecedented nature, viz. the amputation even of the scapula itself; the question must be of the most perplexing and agitating nature. The surgeon must be conscious, that the patient is to die a loathsome and miserable death; yet it is a consciousness which he never can bring home to the mind of the patient or his friends, and if he take upon himself to urge an operation so desperate, and the patient die,—the slight impressions his representations have made vanish, the danger, which was distant and problematical, has been accelerated by his misconduct; by his ill success he is condemned, and never can it be put out of the minds of the relations, that the patient might have lived, or that even the tumor might have burst and resolved into matter. But a precedent like this, and I have witnessed and could relate many, solves all scruples; and he who knows the constitution of such a tumor, its inevitable increase, and the loathsome end of the sufferer, will not, I believe, shrink from his duty. This case is highly interesting, as it is the direct consequence of a very ordinary mischance, of a slight fall, and a bruise importing nothing: it is not merely a prodigy to be gazed on, but an important precedent.

Allow me, before I forsake this interesting subject, to give you one document in practice, from the uni-

versal ignorance, or wilful neglect, of which I see every day the most dismal consequences. A bone, both in itself, and in its surrounding vascular apparatus, is as susceptible of inflammation, and while it is inflamed, or in danger of being inflamed, should be as delicately treated as the soft parts. How often, how continually you have seen this injunction reversed, I need hardly remind you: every bruised bone, and sprained joint, is rubbed and diligently moved. With an ignorant and stupid fear of the joint losing its motion, it is wrought backwards and forwards in every direction! and whatever inflammation is begun, is never permitted to subside! Thus a military gentleman, whose shoulder-bone was diseased, with, I doubt not, an internal caries (for I have dissected such cases, and kept in preparation very long a shoulder joint thus diseased internally, which betrayed no outward appearance of disease), and who had excruciating pains, a total lameness, a singular emaciation of the whole member, and who, though he could mount his horse, could not endure the motion of it, even at a foot pace, was ordered by the physicians he last consulted, along with various other prescriptions, to have his arm turned and wrought backwards and forwards by his servant with all his strength. He fainted more than once under this discipline, and fortunately was not able longer to endure what must have killed him in the end; by completing that caries of the joint which was at that moment just remediable. He came from Ireland, and put himself under my care; and by a course of stimulant fomentations, by bandaging his arm to his side with rollers, as closely as if it had been fractured, and by renewing caustic issues all

round the acromion process, and head of the shoulder, and keeping them running for six months, he is now almost entirely cured. His arm, notwithstanding the stricture of the bandages, has recovered its flesh and firmness; he can raise it now without pain, and finds that he could use it with confidence: but I think it right for a limited term to keep him safe, with the arm slung, and without motion, till every tendency to disease is gone.

A young lady, whose arm I have been obliged to amputate, fell, at the age of fifteen, from a table and sprained her elbow joint. The immediate pain was just such as is usual on such slight accidents; it subsided, and there remained only that dead and heavy pain and stiffness of the joint, which indicates that the ligaments and periosteum are not yet relieved from the inflammation, and which requires stimulant fomentations; perhaps a caustic issue, and perfect rest: what was directed? Why, that she should carry all day long a heavy dressing-iron in her hand, to straiten the joint by the continual extension, and that she should, by frequent exertions of swinging this load backwards and forwards, with the help of a servant to twist and turn the joint, try to recover the free motion of it. This imprudence has almost cost her her life: the internal inflammation was never permitted to subside; the joint swelled, burst out in foetid ulceration; the bones and the joint became completely carious; paroxysms of inflammation, new suppurations, and weeks of excruciating pain before the bursting of each abscess, reduced her to the lowest extremity of weakness. She had hæmoptysis and every appearance of confirmed hectic, and approaching death, when a consultation dictated the amputa-

tion of the arm as the only possible means of saving her. Since the operation, and even before the adhesion of the stump was complete, she had, by pleasant sleep, and the return of appetite, recovered her strength and freshness of complexion, and is now in perfect health.

Such errors are so commonly and thoughtlessly committed, that they are as it were contagious; we do what we see daily done before us, without thought or reflection, which makes a document of this nature, on an ordinary occasion, of no slight importance to the young surgeon.

[The advantage of the author's mode of writing is not merely in the full narrative of cases, but the subjects are brought forward in that irregularity which they present in practice; and by which the reader's attention is kept alive, so that he is prepared for the duties of his profession. In the latter part of the present chapter an entirely new subject is brought forward, and the scrophulous diseases of the joints are put in contrast with the fungous tumors of the bones.

This monstrous tumor of the arm, described above, is one of the earliest well recorded cases of fungous tumor arising from the bone, one of those soft scrophulous tumors, in later works confounded under the term "*fungus hæmatodes*;" that there are tumors of a different constitution or nature, the external characters of which are the same, and both of which are called *fungus hæmatodes*, I am convinced by experience. A tumor of this kind, springing from the bone, I have seen, in several instances, run its course, and destroy the patient in three months. I have seen a tumor, like to this described above, continuing as many years; and at last subduing the patient by hectic,

arising from ulceration and discharge : whereas the patient sinks under the true acute fungus, without any remarkable change taking place in the tumor, and independent of hæmorrhage or discharge of any kind.

The question of amputation will turn entirely upon this, whether the disease be a common scrophulous tumor, or one of these alarming fungous tumors, or soft cancers ? The success of such an operation will be ascribed to the skill of the surgeon, when, in truth, it results from the more innocent nature of the disease.

The practitioner must not be detained from following a practice quite right, in the proper cases, from the observations at the end of this chapter on friction and motion. The fact is, when the apparatus of a joint has been inflamed and injured, and there remains a certain tenderness and weakness, and if nothing be done in such a case, all the parts will degenerate from their proper structure ; the limb will shrink and become wasted. Often, on the contrary, by stimulating embrocations and liniments, by friction, thumbing, and passive motion of the joint, the limb may be restored ; yet certainly, on the other hand, if the case be mistaken, and there be not the consequence of a common inflammation present, but the commencement of a tumor such as is described above, then nothing but mischief can come from interference.]

DISCOURSE IV.

ON TUMORS OF THE NOSTRILS, GUMS, AND THROAT.

THOUGH polypus is one of the most loathsome and fatal diseases, it is described in terms little suited to convey this idea to the young surgeon; who, while he reads a systematic author, or hears a lecturer talk in slight and familiar terms of the disease, and its cure, little suspects the dismal scenes which are passing in the chambers of the sick, and puts his hand, with little forethought or prudence, to operations the most difficult for a man of experience, the most impossible for an unskilful person to perform.

How this levity of manner should be explained, I have been at times doubtful, and am now perhaps uncharitable; but I could not escape observing, that in the works of systematic writers, this appears so simple, so trivial, so harmless a disease; it is represented as so mild in its ordinary, and so incurable in its more malignant form, that the chief care of the surgeon should be, to make a just prognostic, and act with reserve and prudence. But those who have transmitted to us the most faithful records of their cases represent a far different scene. Polypus appears, in their juster pictures, to be one of the most horrible, the most incurable diseases. In writings of systematic authors, all seems simple and harmless, and the methods of cure are trifling and temporizing. In the works of original authors, the methods are rude, violent, and unrelenting: rather than not unroot the tumor, they would burst up the cells of

the face, and destroy all the bones; and they deliberately debate these questions, whether we should not split up the nostrils? trepan the antrum Highmorianum? and dig away the spongy bones? rather than fail to reach the roots of the tumor. Whether it be not allowable to perform bronchotomy, and by opening the trachea procure free breathing for the patient, while these more cruel operations are performing? This is a text, these are discrepancies, on which it becomes us to comment. Those who have heard and repeated the saying, that polypus is in general a mild disease, have of course believed that these are cases of peculiar malignity; that there are certain polypi which the surgeon need not disturb, and should not tamper with, and others which he assuredly cannot cure. But were this conviction ever brought home to the mind of the surgeon, then should his good offices be at an end: surely we must not in any case pretend to meddle with a disease, which, if mild in its species, we should not irritate; which, if malignant, we cannot cure? But I have some experience in this line of practice, and some judgment in this department of reading; and have strong suspicions of something wrong, if not unfaithful, in these opposite representations. Polypus is never mild, nor ever malignant; time, and the natural growth of the tumor, and the pressure it occasions within the soft and bony cells of the nostrils and jaws, must bring every polypus to one invariable form, in its last and fatal stage. Those who are employed in recording cases on unquestionable facts give us the true and only picture of diseases, they speak of none which they have not seen; but systematic authors, obliged to explain each disease in its

order, give descriptions of diseases widely distant from truth, describing what manifestly they have not seen, and explaining, without the slightest remission of their wonted confidence, what they have not learned and cannot know. Whatever you might learn (yet that would be in an irregular and dangerous way) from books of cases, be assured you might read those systematic authors (which I might name, I hope, without envy, and which I allude to without malice), from sun-set until sun-rise, without conceiving the very slightest notion of the disease I am now to speak of.

Polypus is indeed a dreadful disease; but like every other, it becomes so by a slow progression, and advances by gradations easily characterised, and which you will do well to mark. It is described as “a small and pendulous tumor, projecting in the nostril, void of pain, attended with no worse symptoms than watering of the eyes, and sneezing. Sometimes soft, sometimes firm in its texture, and moving backwards and forwards with the breath. You would imagine nothing more simple than to noose such a tumor with a thread, or pull it away with forceps.”

And so indeed is every polypus in its early stages, a small, tight, and moveable tumor, attended with sneezing, watering of the eyes, swelling in moist weather, descending with the breath, but easily repressed with the point of the finger, void of pain, and in no shape alarming; and it is easily extracted too, so as for a time to clear the passage for the breathing! Yet this little tumor, simple as it may appear, is the germ of a very fatal and loathsome disease; and this easy extraction the very cause,

often, of its appearing in its most malignant form : the more easily it is extracted, the more easily does it return ; and whether carelessly extracted, or altogether neglected, it soon returns ; and when it does return, it has not in truth changed its nature, it has not ceased to be in itself mild ; it is then to be feared, not from its malignity, but from its pressure among the delicate cells and membranes of the nose : it soon fills the nostrils, and obstructs the breathing, and causes indescribable anxieties : the patient lies all night with open mouth ; during sleep he is harassed with fearful dreams ; and when he wakes his mouth and throat are parched and dry. The tears are obstructed, and the eyes become watery from the pressure on the lachrymal sac ; the hearing is in like manner injured, by the pressure of the tumor against the mouth of the Eustachian tube ; the voice is changed, and its resonance and tone entirely lost, by the sound no longer passing through the cells of the nose and face ; the swallowing is in some degree affected by the tumor depressing the soft palate ; the pains arising from such slow and irresistible pressure are unceasing ; from the same pressure the bones become carious, and the cells of the face and nose are burst up by its slow growth.

The tumor, in no long period, begins to project from the nostril before, and at the arch of the palate behind ; one nostril grows wide and thick, the nose is turned towards the opposite side, and the whole face, in consequence of a rising of the one or other cheek-bone, becomes oblique ; the root of the nose, where it is set off from the forehead, swells and becomes puffy ; the features tumid and flabby, the face yellow, and the parts round the eye livid : the patient

is affected with headaches which seem to rend the bones asunder, and with perpetual stupor and dozing: the bones and membranes now plainly ulcerate; a foul and foetid matter, blackened with blood, distils from the nostrils, and excoriates them, and by passing partly down the throat occasions diarrhoea: the blood-vessels next give way, and sudden impetuous hemorrhages weaken the patient; the teeth fall from the sockets, and through the empty sockets a foul and foetid matter issues from the antrum.

Now the disease verges towards its conclusion. The patient, conscious that the tumor, lately so mild and moveable, has degenerated into a mortal disease, is resigned to his fate; and no flatteries of his friends, nor soothing words from his physicians, can longer deceive him: in the night he starts from his sleep, in horrible dreams, and with a sense of suffocation; and frequent hæmorrhages bursting out from time to time, reduce him to such extremity of weakness, that for several days he is not able to crawl from his bed; and when he rises from it, he hangs over the fire, cold from loss of blood, pale as a spectre, his lips colourless, and his face like wax, yellow and transparent: he hangs his head forwards, resting it on his hand, and moving it incessantly from side to side, from the intolerable pain, the saliva distilling from his mouth, and the foul matter dropping from the nose: in this state he survives a few weeks, desolate and hopeless. During the last days of his illness, he lies in a state of perpetual stupor, and dies lethargic.

I am well pleased to escape the invidious task, of declaring in any language of my own, how very imperfectly this disease is represented by all writers on

surgery. Mr. Pott professes to give no more than a slight and hasty sketch of the nature, and a few practical hints on the treatment of this disease; but his contempt of all that has been done by preceding authors he seeks not to conceal. "Writers," he says, "tell us, and very truly, that it is a disease of the *membrana pituitaria narium*; that it has different seats, origins, and attachments; that it springs from the *ethmoid bone*, from the *ossa spongiosa*, from the *septum narium*, and even from the *antra maxillaria*: that it is hard or soft, pale or deep red, or sometimes purple; that it is equal in its surface or unequal, large or small, moveable or fixed, single or multiform, painful or indolent; that it makes its appearance forward in the nostrils, or backwards in the fauces, behind the uvula; and that it may be strumous, venereal, or cancerous. When they have given us these general and merely definitive descriptions, they immediately proceed to the *chirurgical treatment*, or method of cure, which they tell us is either by extraction or the use of *escharotics*; to which some have added *ligature*. They then give a general description of the manner of using the *forceps*, of applying *escharotics*, or of passing the string round it; and having provided *styptics* for the suppression of *hæmorrhagy*, they leave every thing else to the reader's imagination, and to the practitioner's choice and judgment.

"From these accounts, those who have not had much opportunity of seeing for themselves, and who are thereby under a sort of necessity of forming their opinions and regulating their practice from books, are induced to believe, that except in some few particular instances, where the distemper is palpably

cancerous, all others are equally objects of chirurgical treatment; and therefore that if, in the first instance, they can lay hold of the polypus with forceps, and in the second can provide against the hæmorrhagy which they have heard so much of, they shall have nothing else to fear.”

Such is the report of Mr. Pott, and I believe it a true and faithful one, of all that had been thought and written by preceding authors.

“ As far as my experience and observation go, the polypi which begin with, or are preceded by, considerable or frequent pain in the forehead and upper part of the nose, and which, as soon as they can be seen, are either highly red, or of a dark purple colour; they which from the time of their being first noticed have never been observed to be sometimes bigger, sometimes less, but have constantly rather increased; they in which the common actions of coughing, sneezing, and blowing the nose, give pain or produce a very disagreeable sensation in the nostril and forehead; they which, when within reach, are painful to the touch; or which, upon being slightly touched, are apt to bleed; they which seem to be fixed, and not moveable by the action of blowing the nose, or of deriving the air through the affected nostril only (where the polypus is only on one side); they which are incompressibly hard, and which, when pressed, occasion pain in the corner of the eye, and in the forehead, and which, if they shed any thing, shed blood; they which, by adhesion, occupy a very considerable space, and seem to consist of a thickening, or of an enlargement of all the membrane covering the septum narium; they which sometimes shed an ichorous, offensive, discoloured discharge; and

they round whose lower part, within the nose, a probe cannot be easily and freely passed, and that to some height, ought not to be attempted at least by the forceps, nor indeed by any other means with which I have the good fortune to be acquainted; and this for reasons obviously deducible from the nature and circumstances of the polypus. On the one hand, the very large extent and quantity of adhesion will render extirpation impracticable, even if the disease could be comprehended within the forceps! which it very frequently cannot; and, on the other, the malignant nature of the distemper! may render all partial removal, all unsuccessful attempts upon it, and indeed any degree of irritation, productive of the most disagreeable consequences.

“But the polypi which are of a palish or greyish light brown colour, or look like a membrane just going to be sloughy; they which are seldom or never painful, nor become so upon being pressed; they which have appeared to be at one time larger, at another less, as the air has happened to be moist or dry; they which ascend and descend freely by the action of respiration through the nose; they which the patient can make to descend by stopping the nostril which is free, or even most free, and then deriving the air through that which the polypus possesses; they which when pressed give no pain, easily yield to such pressure, become flat thereby, and distil a clear lymph, and they round whose lower and visible part a probe can easily, and that to some height, be passed, are fair and fit for extraction: the polypus in these circumstances frequently coming away entire; or if it does not, yet it is removeable without pain, hæmorrhage, or hazard of any kind;

the second of which circumstances I can with strict truth affirm I never yet met with when the disease was at all fit for the operation.

“Of the benign kind of polypus fit for extraction there are two sorts, whose principal difference from each other consists in their different origin or attachment*,” &c. &c.

There is, both in the subject and in the manner of Mr. Pott’s discourse, so insinuating an air of natural sagacity and worldly prudence, that we know not how to deviate from his precepts.

The young practitioner is counselled to be exceedingly careful in examining into all the circumstances previous to his undertaking a cure, “lest he should find too late that he has gone too far to recede †;” and there are few, I fear, upon whom such a maxim will be entirely lost. Were this doctrine true, the fair and logical conclusion must be this: “That polypus is a disease which, if mild, should not be tampered with; if malignant, cannot be cured.” Wherever these terms of benignity, and malignity, are arbitrarily and capriciously applied to a simple tumor, the surgeon has a ready apology for every dereliction of duty, as well as for every blunder in performing it: if a polypus be small, soft, and moveable, then it is mild, and should not be teased; if larger, and of course accompanied with pain, it should not be tampered with, for that is likely to change its nature; but if already large, and accompanied with caries of the bones, then it is plainly cancerous, and no judicious man will touch it even with a finger. If, having made some ungainly attempts to extirpate a polypus,

* Pott’s Works.

† Pott, page 223.

he has manifestly failed, still nothing can be judged amiss in his conduct, except his prognosis : it was not quite so mild or simple as he believed ; it had a malignant character, and could not but grow again ! If it be in the last stage, big, prominent, painful, accompanied with a profuse discharge of ichorous and foetid serum, with hæmorrhages which threaten life, its malignant and cancerous nature is indisputable, and the surgeon is by no means called to risk his reputation, where there is so slight a chance of success. Then the usual and relentless policy is practised, and the patient amused with conversation, sent to a distance, or referred to other and better advice, till his case is too desperate to admit of any attempt.

It is not thus I would have you judge of this disease, nor moralize on the duties of your profession, in a case where, without your help, the patient is sure to die. I shall demonstrably prove to you that polypus is a tumor in itself indolent and harmless ; that it is no farther malignant than as it does, by universal and irresistible pressure in the latter stages, destroy the bones ; that circumstances determine the growth, and the more or less rapid growth determines the fate of the patient : and I shall, I doubt not, prove to your conviction, that it is far better to suffer the salutary pains of operation and caustic than the unavoidable tortures of a disease, which, as soon as it becomes painful, is incurable. You are, by every law, moral and professional, bound to continue your good offices to your patient, while he consents to suffer, or there remains the slightest hope of success. While the doctrine of benignity and malignity (and these terms are repeated in every page of Pott and other writers) is acknowledged ;

while the surgeon pronounces every incipient polypus mild, only because it is small and as yet harmless ; and every polypus malignant which has attained a conspicuous size and more solid texture, and begins to affect the bones ; while he neglects the beginnings, and shuns all concern in the lamentable conclusion of the disease, no patient's life is safe.

The young surgeon finds such curious and happy practices described in books, that he thinks of nothing but the admirable ingeniousness of the invention, nor can he admit a doubt, that he can introduce his probes, his tubes, and his catgut or wires, so as to noose the tumor : but when he goes to grapple with the actual disease, and while he is struggling to apply his wires, the nose is streaming with blood, the patient staring and struggling as if in the act of suffocation, the tubes and forceps are thrust perseveringly into the nostrils and throat, the forceps are next driven deeper into the nostrils, the blood streams again, and the pendulous parts of the polypi which are more prominent in the nostrils, are bruised and mangled, while their roots are left entire, and only fragments of the tumor, mixed with the clots of blood, are found upon the clothes. The patient, terrified, sickened, and spent with hæmorrhagy, prays for some suspense of his suffering, at the moment when the surgeon begins to be abashed at his ill success ; he desists, for a while, from farther violence ; but the same unsuccessful operations are repeated from time to time, and if but the slightest breath of air pass through the nostril, he takes advantage of that seeming success, and, introducing bougies or a thick roll of lint, persuades his patient that his condition will improve daily. But the patient, after a season spent

in vain and miserable endeavours to preserve the nostril free, returns to town with carious bones, deformed features, a projecting polypus, a frame exhausted with suffering, and especially exhausted by suffocation and want of sleep : his life is threatened every moment by impetuous hæmorrhages, and he is plainly beyond the help of better surgery.

The operation of noosing a polypus, which I shall prove to be altogether futile ; or that of extracting it with forceps, which I know by experience never can be perfect or successful, are yet represented as perfectly effectual. The operation of noosing a polypus is one which the young surgeon is taught to perform with all the ceremonies and circumstances of an operation ; and if it is but so performed, that the wire or ligature does not immediately drop away, all the instructions he has ever read or heard of seem to be fulfilled, though the tumor begins to project again in a few days. He believes the cure of polypus to be an operation to be accomplished at once, while, in truth, it is a cure to be accomplished by various and persevering methods. The operation of noosing or extracting a polypus is far from being a splendid piece of surgery, fit to be exhibited in an operation room. I have never known an operator put on his sleeves, and address himself to the work with those mistaken notions, and in the hopes of visibly unrooting the tumor with the forceps, or entangling it in a noose, who did not retire from the scene with confusion and dismay. The horrid scene which ensues, the quick reproduction of the tumor, and the caries of the bones, is not the effect of tampering with a malignant disease, but the natural progress of a tumor uninterrupted by operations so imperfect and

mal adroit. Let no man attempt the cure of this disease, whose sole purpose is to shine as an operator ; who has not perseverance and diligence enough to try, successively, every method, and humility enough to be contented with the happiness of saving his patient by any means.

I verily believe, that none are more innocent than those who deceive us by commending such trivial operations, for they first impose upon themselves. They invent an instrument or method indisputably ingenious ; and, with all the simplicity in the world imagine, because it is ingenious, that it must be useful. Speaking on this subject, I cannot help laying before you one example of this, to me the more striking, as I remember how much I was delighted, when a boy, with the piece of mechanical ingenuity which I am now going to explain : so much was I delighted, that in my admiration of the author's genius I contrived to forget his ill success. The operation is related in the third volume of the Edinburgh Essays, Physical and Literary. “ A man of the name of Davison, very far advanced in years, was admitted into the Royal Infirmary, with a voluminous polypus, which had its root near the epiglottis, lay within the œsophagus, and was occasionally vomited up, when he was excited by emetics, or by thrusting the finger into the fauces. The polypus then occupied the mouth, extended to the fore-teeth, and appeared to consist of four distinct lobes, arising from one root or neck. But the polypus, while it thus occupied the mouth, prevented the breathing of the patient, by covering the opening of the trachea ; wherefore, having just shown it to his surgeons, by vomiting it up into the mouth, he was obliged pre-

sently to swallow it down again for want of breath. His speech, his swallowing, and his breathing, were all so affected by this very voluminous tumor, that it became a very interesting question how to extirpate the tumor: and it was proposed, that while the operation of bronchotomy was performed to give him breath, the noose, by the help of some very ingenious useless machines, should be cast over the tumor; which latter part of the scheme was fulfilled in the following manner: A ring, mounted on a stalk, and having the thread designed for ligature concealed within the circle of the ring, was pushed down into the fauces: the pushing down of the ring excited the patient to vomit, and the ring so occupied the fauces, that when the tumor was vomited up it was driven through the ring; the ring was then pushed harder down towards the root of the tumor; the ligature was then drawn tight; other instruments with wheels and pulleys for passing a double ligature, (the single one not succeeding), were next invented; and finally, the purpose was so effectually accomplished, that the polypus was strangled: he passed, by stool, lumps which he mistook for clots of blood; but he passed also along with those, the loop of the ligature with which the polypus was noosed." It is, in short, insinuated in the surgeon's narrative, that the patient had passed the bulk of the polypus by stool; and it is directly affirmed, (by Mr. Dallas the operator), that "having, at the end of the month, sent for the patient and examined his throat, and made him vomit, nothing preternatural appeared; and that, having presented himself at the distance of eight months at the infirmary, on account of a common cold with which he had been lately seized, he,

upon being examined, seemed to be entirely free from any ailments of the polypous kind."

Such, and so circumstantial is the narrative of this ingenious invention, and of its success ; and it is supported by all the usual apparatus of names, dates, consulting surgeons, operation-room students, &c. Hear now how a plain tale puts this down ; hearken to the fate of a poor soul (in the month of April, 1765) who was declared thus entirely free in April, 1764, "of all ailments of the polypous kind." "I was informed," says Dr. Monro, "that James Davison had died in the Royal Infirmary, to which he had returned a few weeks before that, very feeble and emaciated, as for several months past he had not been able to swallow any solid food, and even swallowed fluids with much difficulty ; the polypus had not however been seen by the surgeons who had examined his throat.

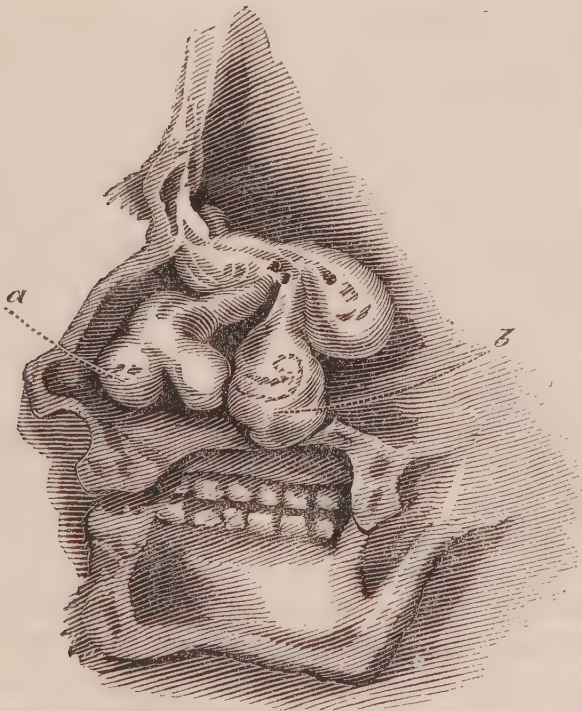
"On dissecting his body, the œsophagus was found to be greatly dilated, by a very large fleshy excrescence or polypus, which grew out from its fore-part, by a single root, about three inches lower than the glottis, but was split at its under part into several lobes, the largest and longest of which reached down to the upper orifice of the stomach." So untrue is the tale told by a man who never designed to deceive ! Judge, then, how dangerous it is to believe, where there is no other evidence than that of the inventor, and where the cunning of the mechanism is so apt to pass for a demonstration that it must be successful.

I am now to enter upon the anatomical investigation of this subject, and to speak of the origin, form, and effects of polypus ; a subject which will admit of

no conjecture; of the manner in which the tumor presents itself in the passages of the nostrils and throat; and how it may be successfully grappled with,—a subject surely of the highest importance to the practical surgeon.

I affect not to purge the science of every prejudice, but those which have a direct relation to our subject in any practical sense, I like to treat of freely. First, that a small and apparently trivial tumor of the nostril, should be ascribed to the common and unseemly practice of picking the nose, is far from being particular; and were this reported merely to frighten boys from unseemly practices, I should feel little disposed to refute it. That the vulgar, who know nothing of the nostril but what they feel with the finger, nor of polypus but what they see projecting, should say this, is quite natural; but when a perplexed and busy creature, in writing about surgery, thinks it his business to describe every thing, and to account for every thing, and seriously warns us of the sad consequences of picking and blowing the nose too forcibly, and how it breeds polypus! why, the thing becomes irresistibly ludicrous; and by conveying to the young surgeon incorrect notions of the place and effect of the polypus, and of all his future operations, it acquires a degree of importance. I have not above three or four times in my life seen the polypus solitary; and usually have found both nostrils are affected. There is a most dangerous prejudice connected with this error, viz. that the polypus is not only tangible, but its root accessible to the finger, since caused by the intrusion of it. The most impatient finger could never reach that part of the nostril where polypus has its seat,

for that is deep and high in the nostrils, towards the throat, and near the opening of the Eustachian tube. The finger can be admitted no deeper than the cartilaginous wing of the nose extends, and can hardly touch the anterior point of the lower spongy bone. The anterior and posterior chambers of the nostril are separated from each other by a narrow slit, which the finger can never pass ; that opening is somewhat of the curved form of the slit in the sounding-board of a violin, and the intrusion of the anterior point of the spongy bone, which is the point that encounters the finger when thrust into the nostril, gives it this peculiar shape. There is a little opening above, and another below this projecting point of

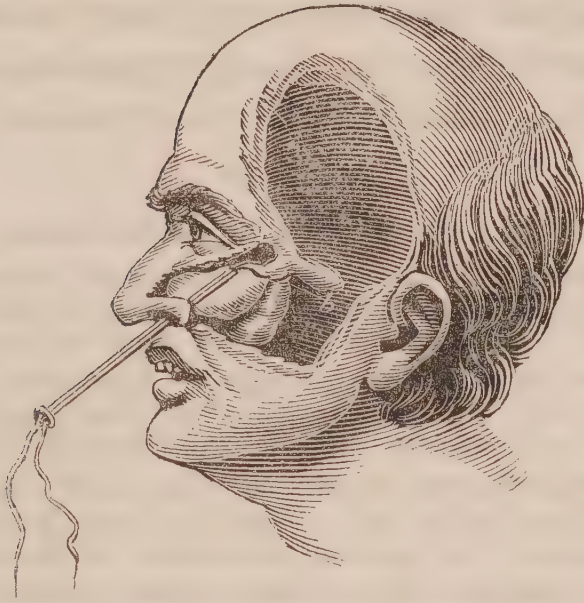


the spongy bone ; through these the heads of the polypus project ; one (*a*) generally fills the opening above the spongy bone, another polypus (*b*) usually

fills the space below : there they hang pendulous, and are forced sometimes through this opening by the breath pushing them down very low ; at other times they are retracted by drawing in the breath ; but how very distant this tangible part of the polypus is from its root, and how long the tumor usually is, I shall next prove to you. The very proof of this is dissection ; and if what I have described be true, you will find it obvious in the drawings, to which I next appeal. In these you will observe, that all the polypi are long and pendulous, and only bulbous at the extremity where they are felt with the finger. You will observe, that in consequence of their great length, the roots are at a great distance from the pedicle or stalk from which they grow, that their bulbous extremity cannot be felt at all times, their roots never, for they are in the highest and narrowest part of the nostril. You will observe, that polypi, which, were they produced by picking the nose, or any local injury, would be solitary, are, on the contrary, numerous beyond any conception you can have formed *.

* The melancholy case which I am now to transcribe, or rather to epitomise, from one of the most celebrated writers on this disorder, is a proof how rarely it is local, how impossible that it should be produced by picking the nose or any such injury, how universally the membrane is diseased.

"A young man," says Manné, "of twenty-seven years of age, died at La Charité. Three years after having the small-pox, from which period he had been afflicted with polypi in the nose, a whole hot-bed of them (says the author), if I may be permitted to use the term, appeared. He had in the passages of the throat and nose, in the antrum maxillare of each side, and in the frontal sinuses, seven polypi in all. His face was shockingly deformed ; he had a great bulging at the root of the nose ; his eyes were removed from each other, by the swelling, to three times their natural distance, and seemed bursting from their sockets ; the nostrils were expanded, and the nose flattened and extended ; while the cheek bones were



Polypi hang forwards in the nose, in a direction so unfavourable to their being noosed, that I see it, from the preparation, as improbable as I have felt it in practice impossible, for the young surgeon to suc-

raised to the level of the nose, and the face and head swelled to an enormous size. The ears were obstructed on either side; the tears flowed over the excoriated cheeks, and sometimes foetid pus burst out from the fistula lachrymalis on either side.

“While his head and face were thus externally deformed, the palate of this miserable creature was so depressed that it lay upon the tongue, and bulged so, that the lower jaw was depressed; the mouth kept perpetually gaping, so that the saliva distilled continually from his jaws, while the nostrils were distended by the bulbous extremities of two larger polypi.

“In dissecting his head these polypi were found to have occasioned great devastation; the cheek was laid open by a crucial incision, and the upper maxillary bone seemingly annihilated, nothing being left of the walls of the antrum but a thin scale like the peeling of an onion; on opening the opposite cheek they found the antrum burst open in a star-like form, and on dividing the delicate membrane which closed this breach in the antrum, a thin and bloody serum exuded, and there projected from the cavity a small portion of a very firm and elastic polypus, of a red colour; and when, by cutting and tearing away the rest of the bone, the tumor was found, very large and quite insulated, except at its neck, which was of such dimensions as to be easily embraced in the circle of the fore-finger

ceed in noosing them ; and a practical fact is the point to which I shall particularly call your attention ; yet let me acknowledge, that it is by experience alone that I have learned how difficult it is to noose that lesser

and thumb. It resembled a turnip in respect of shape ; its lower end was bulbous and large ; but its pedicle or immediate attachment was so exceedingly delicate that it seemed difficult to imagine how so great a tumor could grow, or even be nourished, when formed, by so small a root. It was no more than one line (the twelfth of an inch) in diameter, and of the same length. The coat of the tumor was smooth, delicate, not irregular nor warty ; its substance was lardy, and the bottom of the cavity in which it was lodged formed one half of that concavity of the palate which pressed upon the tongue. On opening the antrum of the opposite side, they found it occupied with a tumor expressly similar in all points and circumstances, in size, form, consistence, and colour, and in its effect upon the adjacent parts. Upon opening the two frontal sinuses, there was found on each of them a tumor, of half the size of those which distended the antrum. These also had each its delicate pedicle, which grew from the margin of that little hole by which the frontal sinus of each side communicates with the nose ; the partition betwixt the sinuses was destroyed, thence they formed but one general cavity ; from this cavity, as from the antra Highmorianana, a little of a yellowish serum issued, upon their being opened ; and here, as in the antrum, the pituitary or Schneiderian membrane was much thickened. These tumors were spherical, but the mutual pressure of the tumors had flattened each upon that side when it encountered its fellow. To have a more perfect view of the effects of this pressure on the adjacent parts, they were obliged to dissect out the eyes ; and then it was seen that the eyes were displaced by the pressure of these tumors which had made the inner side of each orbit bulge outwards ; and upon opening the skull they found that a thin protuberance had actually compressed the brain, for the two hollows of the os frontis were convex and pressed so inwards, that betwixt them the crista galli was entirely concealed. Upon opening the throat behind the palate, three tumors, seemingly arising from one pedicle, were seen projecting into the fauces.

“ This may serve as a general analysis of this unhappy case, and must suggest a doubt whether it may not, in circumstances, be allowable and laudable to attempt the desperate yet harmless operation of trepanning ; or rather cutting open, with a strong scalpel, the frontal or maxillary sinuses, distended, softened, and become carious by the long pressure of such enormous tumors. It is lamentable to observe how unavailing every kind of operation must be where the tumors are thus numerous, and in how short a period it runs its fatal course.”

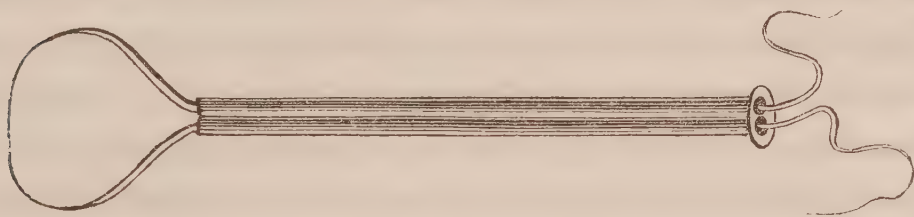
polypus which hangs forward in the nose. Had I sat down, like many of my betters, in the closet, to contrive ways of noosing such a tumor, I could have imagined nothing more likely to succeed than the common process. I no more doubted than others, that the method which I found so ingenious, when described in books, could fail me in the act. Allow me to explain :—In the cut on the other page, you cannot but remark, that the polypi with which the nostril is filled hang from a point very high in the nostril, and very far back ; that their roots must be in the posterior end of the upper spongy bone, under the socket of the eye, and not far from the opening of the Eustachian tube.

The polypus, then, is not solitary ; on the contrary, the predisposition is so strong, that three or four polypi are often crowded in one nostril,—a circumstance extremely unfavourable to the operation of the ligature, which, though in itself effectual, would, in a case like this, fail ; for it would, in such a case, require to be applied four successive times ; after each operation the breathing would be again interrupted ; a tumor lying deeper would replace that which was extirpated, which would thence seem to grow again in a few days : for one tumor only is seen at once ; a second presents itself as soon as the nostril is cleared of the first ; tumor after tumor presents in succession, and the operations seem endless and quite ineffectual. Besides, while the polypi are numerous in one nostril, it rarely happens that others are not formed or forming, which are also numerous. Polypi are usually found at the same moment fit for operation in both the nostrils, as appears in the right nostril of a preparation before me, where a polypus long and

flat, resembling one of the nymphæ in shape, hangs from the upper spongy bone. In this preparation the roof or upper part of the antrum Highmorianum is opened,—that part which forms the floor for the eye; the alveolar process and teeth of the upper jaw are cut away, and, of course, the lower spongy bone is gone, and only the superior one left. Consequently, the length of the polypi, their slender stalks and bulbous heads, their peculiar direction, viz. hanging forward in the nostril, the straightened condition of the neck of the tumor, and especially the number of long stringy polypi occupying both nostrils, are circumstances made evident. Now, you will judge, without any help of mine, how unlikely it is that picking the nose should ever cause this disease. The most impatient finger (I have said) can never, in picking the nose, reach that point whence these tumors have their origin, nor the most dexterous operator push his finger so deep as to reach these roots. You will also judge how impossible it is that operations should be successfully performed only on that bulbous part of the polypus which can be touched with the point of the finger; how difficult to apply a noose to the root of the tumor which lies so far beyond the narrow slit of the internal nostril. Remember, that in all your operations, and especially in the application of caustic to the roots of polypi extirpated by other means, your aim must be to reach a point nearly under the socket of the eye, in the deepest and highest part of the arch of the nostrils, where the nostril opens backward into the throat. Remember the length of a polypus, (a circumstance which shall be demonstrated by other drawings,) and that, however low the bulbous part may descend, or be felt by

the finger, it is only by pushing your instruments deep, beyond the narrow cleft formed by the projection of the spongy bone, that you can do good.

Let me next represent to you, what I conceive to be the chief difficulty in applying the noose to such tumors. This tube was invented by Mr. Levret, for



the purpose of passing a silver wire as a noose, and of tightening the noose after being thus applied; and in the application of the ligature, which was new, and peculiar to Levret, he had no motive so much at heart as the guarding against hæmorrhagy. This was a vain fear, for though I have seen dreadful hæmorrhages in the last stage of polypus, I have never, in twitching away polypi with the forceps, seen a hæmorrhagy worth regarding; I have always kept a ligature in the nostrils, and a plug in the mouth, ready to be drawn up, by the help of that ligature, into the posterior opening of the nostrils, but have not found occasion actually to draw up the plug more than three or four times in my life; and then rather from fear than danger. The tube of Levret is thus used;—the loop of the wire is passed over the lower end or bulbous head of the polypus, and hitched higher, towards the root of the tumor, by pushing the tube deeper and higher into the nostrils; or others (I know not who, for such probes are drawn in every book), advise us, after laying a noose of wire or catgut loosely about the tumor, to hitch it up to

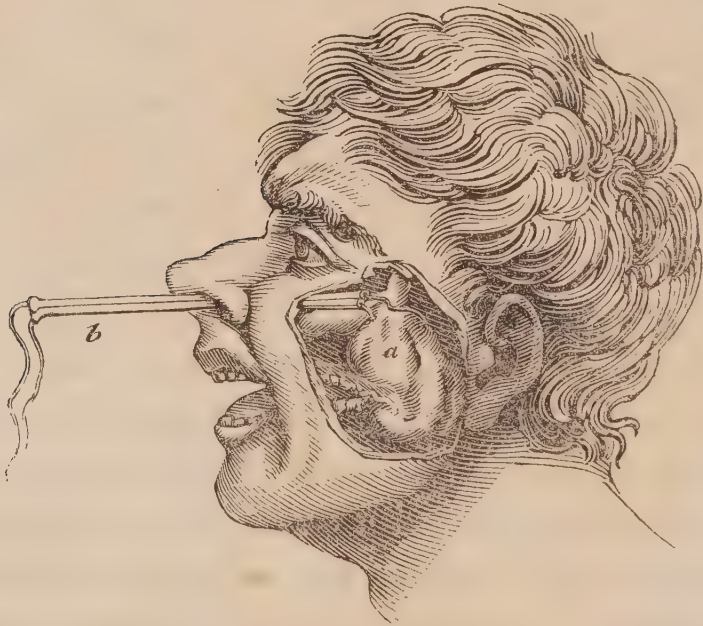
the root, where the tumor rises from the bone, by pushing it higher, first on one side, then on the other, by the help of this forked probe. But when you look



to the scheme or plan of such an operation, you will foresee much difficulty in accomplishing it; for the tumor, long and slender as it always is, hangs in the direction in which you are to push the ligature; the ligature or noose, you never entertain a doubt, is to run as clean and easily along the polypus as a ring slips upon the finger, or as the ring of a window-curtain slides along the cord! but the truth is, that either from the polypus being forced backwards into the nostril along with the ligature, or by the hitching of some part of the noose against the inequalities of the polypus, or by the narrowness of the nasal cleft catching the wire, it certainly is not merely difficult to apply it, but impossible. I have seen such an operation practised fifty times, by men of various degrees of skill and ingenuity, some extremely awkward, some perfectly dexterous, but never have I seen this method succeed: if even the ligature hung two days by the polypus, still the extirpation was but partial; usually the ligature gets no hold on long and slender polypi, which hang thus forwards in the nostril. I have always miscarried in attempting to catch a nasal polypus in a noose of wire or cat-gut; I have planned my little operations so cunningly, that I have imagined it impossible I should fail, yet, in my best concerted schemes I have been foiled as completely as the most awkward person I ever saw attempt the operation.

If I am correct in ascribing this difficulty to the direction in which the nasal polypus hangs, being the same with that in which the ligature must be drawn, my reasoning will be confirmed, by the converse of the proposition being true, viz. that guttural polypi, those which, in place of occupying the nostrils, pass backwards into the throat, are easily noosed. This is an operation to the happy success of which I can speak with confidence. When the polypus is single, or when one polypus has arrived at such a size, as to render whatever others may be behind it trivial; when the tumor, after having long filled the nostril, projects from the posterior opening of the nostrils into the fauces, depresses the palate, hinders the swallowing as well as the breathing, and is both seen, upon depressing the tongue, and felt upon passing the fingers deep into the throat, firm, hard, and bulky; at this stage of its growth, when the surgeon most fears to grapple with such a tumor, it is in truth the most manageable! it may be extracted with safety; and if there be an internal tumor which admits of extirpation by ligature, this is it. When the tumor is thus visible in the fauces, the ligature must be passed through the corresponding nostril, hooked out from the fauces with a hook, or caught with the forceps, brought through the mouth beyond the teeth and lips, spread out upon the fingers, and by the help of the fingers (pushed deep into the throat) passed over the bulbous part of the tumor, and then the wire being pulled back through the nostril, it slides up to the root of the polypus, or near it, or may be placed pretty correctly by a little help. Now when thus drawn, the course of the ligature is transverse to the direction of the tumor,

and is perfectly effectual in its operation ; for the good effects of a ligature, thus applied, I would willingly be responsible, having very often performed it with success. This plan represents such a guttural polypus (*a*), small in its neck, very bulbous in its extremity, bulky and solid, so as to depress the palate, and so wedged in the upper part of the fauces, betwixt the fore-part of the vertebræ, and the bones of the face, as to cause almost total deafness, by pressing the mouths of the Eustachian tubes, and so exposed to the operation of ligature, that having passed it, you might, in place of gradually twisting and tightening the wire, by the help of the tube (*b*), twitch out the polypus by the roots, by sheer force.



Experience, if ever you should be so unfortunate as to have experience in this disease, will best refute the prejudice so long indulged, so often mentioned as an apology for ill success, viz. the malignant nature of some polypi ! If hæmorrhagies, pains, or a fœtid



Drawn by J. Bell.

Engraved by

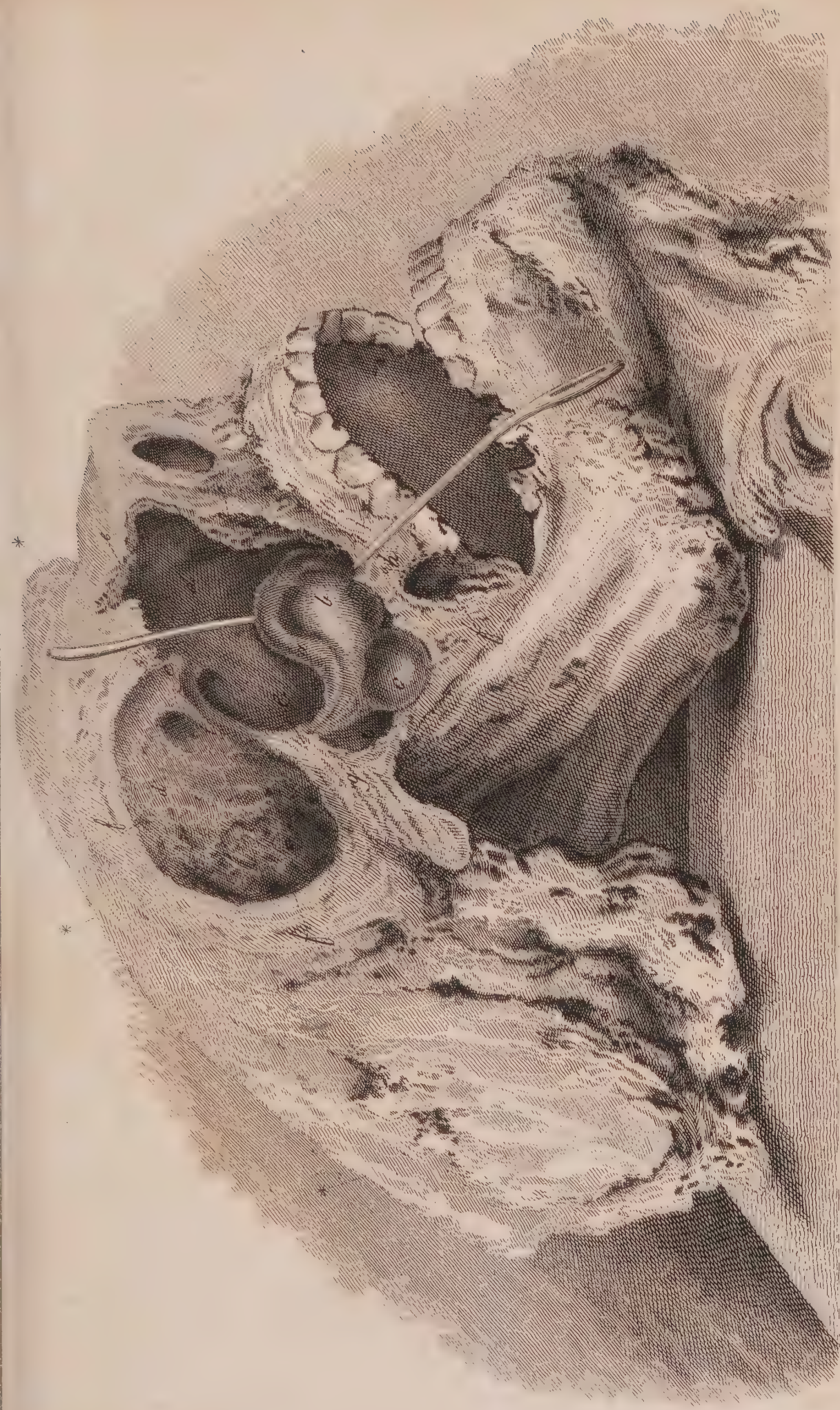
* a. The Polypus.

ichor distilling from the nostril, are to be accounted tokens of malignity, every polypus must be malignant in its latter stage, for its first ill symptoms begin from the pressure of the tumor against all the cells and spongy bones, and especially the walls of the antrum Highmorianum ; and its fatal conclusion proceeds from a total caries of the face. In the case from which the drawing of polypus is taken, after dreadful sufferings on the part of the patient, I, in a second and desperate attempt to save his life, found (upon passing my finger deep into the nostril in search of the roots of the polypi), that the partition of the antrum was destroyed, that my finger had entered, through sharp and naked bones, into the cavity of the antrum, the walls of which were consumed by caries, which soon proved fatal. But it is further to be remarked, that the sella turcica lies immediately above the cleft of the nostrils, and the two anterior lobes of the brain lie in the hollows by the sides of the sella turcica : you have here, then, all the essential relations of these bony cells to the polypus, and must perceive, that as soon as the tumors fill the whole cavities, distend them, and in the end press upon them, they will produce caries by such pressure, as speedily as an aneurismal tumor : that such caries will be long of affecting the septum, because it is massy, and yet can give way and be inclined to one side ; but will affect more immediately the thin partition betwixt the nostril and the antrum, and lay them into one cavity. The cribriform plate of the æthmoid bone, which lies immediately before the sella turcica, and above the nostrils, will be next affected ; and, indeed, one of the earliest signs of

polypus is a degree of stupor from pressure on the brain ; and one of the most frequent and fatal conclusions of the disease is a continued coma, for several days preceding death. I have a preparation of the æthmoid bone, of a poor woman, who perished of this disease : her face was universally swelled ; the root of the nose, where it rises from the forehead, was livid and gangrenous ; she lay slumbering for many days ; she could hardly hear, or be made to reply ; she only groaned out, in a low voice, “ very ill ;” and after death, the brain was found in a state of gangrenous ulcer ; and the upper spongy bones, whence the tumor had its origin, quite carious, and entirely absorbed ; the polypus itself was reduced to a soft and pulpy mass, which, on maceration, dissolved so entirely as to leave only a few stringy fibres adhering to the spongy bones ; while the lower part of the brain was left exposed, and the centre of the æthmoid bone was open, its cribriform plate being quite destroyed*.

But more frequently the upper jaw-bone is destroyed ; the tumor makes its way into the antrum ; the whole upper jaw-bone becomes carious ; the teeth drop from their places ; and a foetid matter distils from their sockets ; and the patient dies, wasted by pain and hæmorrhagy, as happened in the case of a fine young man of the name of Cameron, who put himself under my care, in the most inauspicious circumstances, and died in the greatest misery. The polypi were long, slender, and firm ; their roots proceeded from under the socket of the eye.

* See Commentary.



Engraved by E. Mitchell.

Drawn by J. Bell.

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Secondly, from the septum narium, to the line of carious bone which was the outside wall or shell of the antrum, nothing intervened, the whole cavity was occupied by the polypi ; in short, the antrum Highmorianum, and the nostril, formed one wide cavity, in consequence of the caries of the bones. Thirdly, though one only of the molares dropped from its socket, the opening it left was wide, rugged, and carious ; in truth, the antrum was so open at this point, that you could almost put the point of your little finger through the opening, so as to touch the polypi. But while the bones are thus carious, where are the tokens of cancer? are not those polypi long, stringy, firm, and fibrous? are they not still firm after long maceration? what difference can we find betwixt an incipient polypus, acknowledged to be mild, and this which has caused death? Are not these, though now shrivelled by the spirits in which they are preserved, the tumors which, from their bulk and pressure, dilated the nostrils? Are not these tumors now, after the patient's death, still hard and firm, while the bone and cavities which contained them are destroyed? Such is the condition of these long and pendulous polypi, which should, from their consequences, have been pronounced peculiarly malignant: in the tumors themselves, there is no token of malignity; in the state of the bones, there appears destruction enough to account for the fœtor, the pains, the profusion of matter, and all the worst symptoms of the disease, during life, and for the miserable manner of the patient's death. In this same preparation, a polypus is seen from behind projecting over the soft palate, depressing the arches of the palate, filling all the back part of the nostril where it opens into the throat,

and closing, of course, entirely the mouth of the Eustachian tube ; and here you will observe, how by this dissection former reasonings are confirmed ; for the probable effects of pressure against the thin walls of the antrum, and the delicate spongy bones, may be inferred from the size and number of the polypi ; but here, (see p. 142), the actual impaction of one solid polypus in the back part of the nostril demonstrates, first, the effects such pressure must have upon the mouth of the Eustachian tube ; second, the probable effects of its distending the bony part of the nostril, and affecting the thin and delicate walls of the antrum.

Polypus has sometimes, independent of any innate malignity, and rarely from its peculiar situation, a very peculiar aspect, and runs its course more rapidly. I am confident, I have observed, that when polypus, which, in its early stage, is usually attended with no worse signs than sneezing and running of the head, is attended with rheumatic and toothachy pains ; when the side of the face swells, before the natural growth of the tumor should produce this alarming change, and the cheek-bone particularly rises, and is covered with inflamed and puffy integuments ; when the incessant and acute pain is limited to one side of the face ; when the teeth loosen, drop out successively from their sockets, and are followed by a sanious and foetid discharge, we may be assured of the polypus having one kind of malignity, viz. that it is confined within a narrow cavity, that it is seated in the antrum, that the cheek and jaw bones will become early carious, while the destructive pressure is operating, also, in every other direction ; and that the polypus being within the antrum, the operation of noosing is not

practicable, and no ordinary operation, nor common degree of violence, is likely to be successful in eradicating the disease. Thus far is early pain a sign of greater malignity, or, in other terms, of that destructive pressure, which in the end causes caries, hæmorrhagy, and death.

One thing more I beg leave to observe : It seems to me, that the predisposition to disease is universal in the Schneiderian membrane ; that the earliest appearance of the disease is, in general, swelling, especially of that part of the membrane which involves the spongy bones ; that almost universally the disease is produced by cold ; that many of those who have been under my care, having got wet in riding, running, or other exercise, have had a sudden and sensible cold, attended with violent paroxysms of sneezing, which has never for a moment ceased, till the polypus was perfectly formed, the breathing obstructed ; the particular character of the tumor, viz. that of moving backwards and forwards with the breath, becomes perceptible, and the polypus, in short, tangible with the finger.

I have, in the opening of this discourse, represented the progress of this disease through its various stages ; you must have observed, that polypus is, in the several periods of its progress, so unlike itself, that though invariably mild, and void of pain, in its early period, it ends as invariably in caries of the bones, and death from hæmorrhages, and hectic, and pressure upon the brain. You must, of course, conclude, that those who maintain the opposite doctrines of malignity and benignity, much resemble the knights coming from opposite roads, from the east and from the west, and arriving at the statue erected at the meeting of the

opposite roads, pronounced, the one, that the statue was of silver, the other, that it was of gold, and maintaining their opinions with fury, gave battle to one another on the spot, while the traveller who advanced by the middle road, found that both were right.

First, In its early stage polypus has invariably that character which is usually denominated mild: it is small, moveable, pale, colourless, and has not as yet begun to affect the adjacent parts by the pressure; there is a watering of the eyes, sneezing, altered voice, and interrupted breathing, but as yet no pain, nor any foetid ichor distilling from the nose: from the smallness and pendulous direction of such polypus, to noose it is difficult; and from the numbers of smaller polypi which usually lurk one behind another, the perfect extirpation of all of them by applying the noose is nearly impossible. The happiest and most successful process is to extract the body or bulky part of such polypi with forceps, and to destroy their roots with caustic.

Second, In its next stage, the polypus grows to a great bulk, not only fills the nostril, but is visible in the throat; the voice is entirely changed, for not a breath of air reaches the bony cells, nor passes through the nostrils; the hearing is greatly affected; if you introduce your fingers deep into the throat, you feel a tumor so bulky, as at once to depress the soft palate, and compress entirely the mouth of one or both Eustachian tubes; the face is swelled and unsightly, the nose inclined to one side, blood begins occasionally to flow, and the matter distilling from the nostrils and throat begins to be foetid; the pressure is now universal, and begins to affect the bones,

and the disease borders on that stage which is, I fear, incurable.

This bulky and seemingly dangerous polypus, terrifies the young surgeon. He reads in elementary books only of trivial tumors appearing in the nostril, and is alarmed when he sees a polypus of this enormous size: he has read in books of cases, of polypi thus oppressing the patient, and descending into the throat; but he recollects, that the surgeons in these desperate circumstances committed every kind of devastation; they often cleft the palate to reach the tumor, and were willing even to perforate the trachea: yet this case, or this stage rather of the disease, is not desperate; it is indeed on the verge of that period in which the polypus is incurable, but from its very bulk it is easily and effectually noosed. I find not the slightest difficulty in this case: passing a silver wire through the nostril, bringing it out through the mouth, and with the points of the fingers (thrust deep into the throat) raising it over the bulbous and most dependent part of the tumor, I draw it back into the nostril, and, as it appears to me, quite to the neck of the tumor; for I have often succeeded thus, and never found reason to seek the roots of the polypus, or apply caustic.

Third, In its third and last stage, when the passages of the nostrils and throat have been long obstructed, and the face much deformed; when the patient has long endured the rending headaches, and pains proceeding from the distension; when the surgeon can distinguish, by pressing with his fingers, that the cheek bones are softened, and the nasal bones become moveable, and fœtor and hæmorrhages intimate the caries within; when the integuments of the face

are puffy, the skin reddened, or livid, over the root of the nose, and the teeth loosened ; when the stupor from pressure on the brain, and the chilliness from want of nourishment and loss of blood, are great and continual, the disease is declining into its last stage, which we can hardly palliate, and cannot cure. This is the stage of the disease reputed cancerous, and operations undertaken in these circumstances, and performed, as I have seen them, with rudeness, inflame the brain, so that the patient presently sinks into absolute stupor, and dies.

For every practical purpose, the definition of these three stages is, as I judge, altogether sufficient.

[Most of the cases mentioned by my brother, in this division of his work, I saw with him, and I partook of his sentiments, and coincided in opinion with him ; but my experience since constrains me to give my assent to the more common opinion of the profession, that the most marked difference exists in the tumors which grow from the mucous membrane of the nose, and fill the passages.

From the soft, pale, and comparatively harmless swelling of the Schneiderian membrane, to the fungous and brain-like tumor which occupies the face, and presses backward on the brain, there are many tumors which differ altogether in their nature.

What is above eloquently and strongly stated, in respect to polypi, is perfectly true—that by their pressure merely they will destroy the membrane, press aside the bones, oppress the organs of smelling, hearing, and vision ; that they will bleed, cause foetid discharge, and occasion great pain. It is true that in all these circumstances they will resemble cancer, while, in reality, they are not cancerous. There are

reasons for extirpating, for doing every thing possible to eradicate polypi; but it cannot be denied that there are tumors of a formidable nature from a different cause, from their original and peculiar nature; and it is well to know this, or we shall be blaming ourselves for neglect, and for too lenient an operation, when it will often happen that nothing can save the patient from a horrible fate.

With respect to the operation recommended for the extirpation of these polypi, there is something more necessary than cutting them off, even were we to succeed in cutting them off close to the surfaces from which they spring. Do we succeed in eradicating the common wart from the skin, by cutting it off? and if we fail here, what hope can we have of eradicating a polypus by the same means? No; when we have torn or cut away the polypus from the cavities of the nose, we have just begun the treatment; we have discharged the cavities of that mass, which permits us to make our application to the membrane itself.

It is necessary to excite the membrane into new action, for there are only two methods of cure. The first is to withdraw the irritation (probably seated in the stomach) which has produced the excrescence: the second is, to change the disposition of the part, by committing such violence upon it as shall rouse it into healthy action.]

DISCOURSE V.

OF THE VARIOUS OPERATIONS PRACTICABLE IN THESE
SEVERAL STAGES OF POLYPUS.OF THE FIRST STAGE ; OR, OF SMALL AND INCIPIENT
POLYPI.

THE forceps, knife, and caustic, are the means I have found most suitable to the smaller polypi ; and, according to the conceptions I form of each particular tumor, according to the period of its growth, the symptoms and effects of its pressure, and, by searching with the probe, or fingers, I use those instruments variously, and pursue them according to the progress and effect of the operations. I begin with the forceps, and conclude with the caustic ; and I find the extirpation of a polypus, and the killing of its roots, not an operation to be performed with such a show of dexterity as to captivate the pupils who assist or are present ; I find it to be a work at once slow and difficult, and often, I fear, it is imperfectly accomplished.

It is assuredly neither the root, nor even the body of a polypus, that you are able to seize with the forceps ; but the bulbous point only ; for you will observe in all these drawings, that the neck of the polypus, and all that hangs in the passage, is slender and delicate, that it forms a bulb, only where it hangs below the narrowed slit of the internal nostril,

or behind the palate ; that it is of this bulb only that I can catch a slippery and insecure hold, so that you may sometimes, in consequence of the slenderness of the neck, and, by a sort of accident, twitch it off from its narrowest part, and close to the spongy bone. The pedicle sometimes gives way spontaneously, the tumor dropping into the fauces : and it will often, by a happy chance, break off from the root in extracting. In such operation no man need affect unusual address : if the bulb retires before the instruments when pushed into the nostril, he has then a better chance of catching the neck : the bleeding so much dreaded, and made an argument, almost the sole one, by Levret, for adopting his method by ligature, is indeed extremely slight : from much experience I can assure you, that such hæmorrhagy will never weaken the patient, nor require a plug, which yet should always be in readiness ; but it is not so in extirpating the roots of the tumor with the knife, then the hæmorrhage is great. Both nostrils are usually diseased, and, on the first day, I extract whatever polypi present in either nostril ; but, far from imagining that I have done all my duty to the patient, I proceed at next visit, and indeed at every following visit, to search for polypi, or their remains. Some polypi, I find, come out entire, as I judge by their form ; others, manifestly short of their full dimensions, and mangled. The anterior nostril being cleared, I see down into the nasal slit, and feel deeper with my finger : often, upon looking into the nostril, I see, even at a late stage of my operations, the remains of a polypus, or feel it with the extremity of the finger, and still more frequently I am sensible of eradicating, by various methods, polypi which are

too deep to be visible; for behind the narrow slit which the finger cannot pass, the nostril is enlarged, and in that wider part, usually the vomer is pressed to one side, there is left a hollow in which the polypi hang. It is only by continual examination, and the most earnest attention, and a careful calculation of points and distances, that such remains of polypi are discovered: first, by a rattling noise, when the breath is driven through the nostril, which, though tolerably free, is so only at times, and in particular postures: secondly, by feeling with the probe, or with a bigger instrument, when we perceive that the back passage is not clear, the point of the instrument (I often use the Sound) encountering a resistance when it should descend to the back of the nostril, so as to touch the velum; the resistance we are sensible is not solid, such as would proceed from the probe encountering one of the spongy bones, but soft and yielding, such as we are sensible we could overcome by dashing the instrument down into the throat: thirdly, when the patient, in consequence of our first operations, inhales his breath freely, but cannot breathe out with equal freedom, we are sure that a polypus, or the remains of one, are still hanging in the back part of the nostrils, nearer the palate; acting like a valve, it recedes when the patient draws in his breath, but, when he breathes out, it falls flat upon the back of the nostril, and prevents the exit of the air. Now, although I am pleased when I see the stupor lessen, the breathing freer, and the hearing restored, I am conscious that all is not safe, and that there must be added other essential signs of the passage being free. It is in this stage that the patient is usually dismissed, and most inhumanely, with some trivial directions of

introducing bougies, or drawing astringent solutions up the nostril, to return in a few months with an incurable and carious disease of all the bones. When I find that, though the patient breathes easily, the head reclining backwards, he cannot breathe in the natural and perpendicular posture; when I find that, though he inhales the breath easily, he finds it suddenly and vehemently stopped, however strongly and perseveringly he presses it; when I find (suspecting from those signs something wrong) that, though the anterior nostril is free, some coloured body appears within the nasal slit, is felt with the finger, though indistinctly, and is directly encountered by the Sound, or big probe, passed from the nostril towards the throat; when I find that his breathing (even after having become free) after he is able to dash out by vehement efforts, the prodigious quantity of thickened mucus, which the inflamed state of the nostril generates, is yet accompanied with a rattling and snorting noise; when that peculiar noise continues after the nostril is cleansed by snorting, and by wiping it within with the probe covered with lint, I am sure there is some dangerous remains of the disease. Often I see this, after I have begun to apply the caustic, and discover the remains of the polypus, rounded by ulceration, of a brilliant colour and bud-like; but never, after this stage, do I expect good from the forceps: I proceed to rougher and more decisive methods.

When I find the whole of the posterior nostril closed by a spongy polypus, which I either have not reached, or have extirpated imperfectly, I have recourse to the knife: when I first ordered knives to be forged for me, I little imagined I had the least

authority for proceeding in this enterprising way ; yet I find that, far from having neglected those passages of ancient authors, where the use of the knife, and the *spathula*, which was a sort of knife, was mentioned by Celsus, and by the Arabians, I had made accurate notes of their methods, which I had yet so entirely forgotten, as to proceed in cutting out polypi, with all the timidity of one who was attempting a thing at once unprecedented and dangerous. I recollected no precedents, and reasoned only on the necessity, on the simplicity of the operation, and by analogy inferred, that if we might extirpate a tumor of the cheek or lip, of the palate or tonsil, with the knife, much more should we adventure to extirpate that of the nostril, since, by drawing up plugs into the nostril from behind, we could entirely suppress whatever hæmorrhagy any operation produced ; we could apprehend nothing from the wounding of the spongy bones ; and the operation of incision, in place of the rude method of tearing and mangling with forceps, seemed more delicate in relation to the membrane, and more effectual in respect to the tumor. I have never since that period (now many years past) spared the knife in operations of this nature : often I have used it in the first operations, and, in place of pulling away the more bulky polypi with the forceps, have slipped in the knife into the nostril, and carrying it flat and vertical, till I reached, according to my apprehension, the root of the tumor, have then turned the edge towards it, and with some mangling, and not without both difficulty and fear, have cut it off. But when the nostril is already in some degree clear ; when the anterior nostril is free in so far as to admit the knives easily,

but the posterior nostril still encumbered with tumors, or the remains of tumors, I find it particularly advantageous, to pass the knife deep through the nostril, till it lies in the posterior opening of the nostril over the palate ; then turning the knife, and striking a stroke alternately to right and left, or cutting with premeditation in that direction, in which, from the probe, or the circumstances of the breathing, I suspect the tumor to hang, I free the nostril of this last obstruction. I do not know a greater happiness for the patient, or a greater victory on the part of the surgeon, than that of clearing the nostrils of this very dangerous disease : in whichsoever relation I stood, of patient or of surgeon, I would set no limits to the sacrifices I would make for such a purpose : I have ever remarked, that the period of suffering on the part of the patient, or of necessary cruelty on the part of the surgeon, though seemingly long, is really transient, and, when the end is accomplished, on the return of health and pleasure, when freedom of breathing and of hearing is restored, is entirely forgotten. Therefore, I entreat you in all such cases to persevere : there is but one immediate danger, viz. that of hæmorrhagy ; and I leave you to judge, whether any incision these knives can make, although it were directly into the membrane and among the spongy bones, much less such as is made into the slender neck or body of a tumor so small as to be contained within the nostril, could be dangerous ! Confident that it could not, I have always used the knife freely, and, though I have had the plugs for suppressing hæmorrhagy ready, and have usually indeed had the ligature ready passed from the nostril to the throat, prepared to draw up the plug, I have

not more than twice, or three times at the utmost, had occasion to draw it, and then only to save the strength, and lessen the alarm of the patient, not to save his life.

For the suppressing of the hæmorrhagy, it is necessary that you be made acquainted with the introduction of the noose, which is a method at once simple and effectual, of drawing up a plug from behind the palate to the posterior opening of the nostril, so as to have it in your power to close at once both openings, to restrain the blood. You are to take, not a piece of catgut, for that is liable to twist very provokingly, and to be so softened with the moisture of the fauces as to lose its shape; but a piece of delicate silver wire, or, occasionally, I have used a harpsichord wire, and doubling it, you make the patient gape, introduce the loop of the wire through the nostril, and watch its appearance in the throat; the splendour of the silver wire shows it at once; if you find the patient not at all excited to cough, you may be assured the wire has not yet reached the fauces; if he is in danger of suffocating, you may be assured that the loop of the wire actually touches the epiglottis; then you will retract it a little, and the irritation will cease. The way to succeed is to carry all quietly and softly, to insinuate the wire along the nostril very gently, to watch for it in the throat carefully, to mark its appearance instantly, when it begins to pass behind the velum, to push it no farther, for then it touches the irritable parts, to be ready with the crooked probe, or the dressing forceps, or a blunt hook, to catch it the instant it appears, and draw it out by the mouth. Then, in the loop of the wire, you fix, with a piece

of thread, a small pad of charpie, and make ready to draw it back through the mouth, and up behind the soft palate, into the back of the nostrils. You prepare for this act by twining the wire round the fingers of your left hand, near the nostril, and by holding the plug upon the point of the fingers of your right hand; you then draw back the wire through the nostrils, and push the plug into the mouth by corresponding motions of your two hands, and when you have got the plug to the back of the palate, and just sticking in the fauces, you must not leave it a moment there, but by a sudden jerk with the left hand, pushing boldly at the same moment with the fingers of the right, you bolt it up into the posterior opening of the nostrils, above the back of the palate, and fix it at once in the cleft at the back of the nostrils. This being finished by plugging, at the same time, the opening of the corresponding nostril, there is no longer a possibility of the blood escaping. I have several times needed to use this method in cases of epistaxis, and three or four times after extirpating polypus, but especially after using the knife *.

When all is done that knife or forceps can do, I proceed to use the caustic, and with this conviction, that I should be very indifferent indeed, whether I destroy the polypus only, or the spongy bone, or much of the membrane, if but the polypus be destroyed. However confident I am of having extirpated the tumors by my preliminary operations, I never think it superfluous to burn the roots, but

* See Commentary by Mr. C. Bell.

apply the caustic the more boldly, when, by the frequency of my operations, I am sure of being able to mark the points of the nostril at which I have to expect the roots of the polypi. To apply the caustic effectually, you must apply it boldly; and if you consider the important object to be attained, you will be careless although it should affect the spongy bones; or rather, you will be fearless of every thing, but the error of not applying it effectually. I find much address necessary in this, which I confess I have learnt slowly.

I alter my method occasionally, in the course of a cure, and according to the circumstances of each case. First, I am careful to have the nostril entirely cleared of mucus; which, in the inflamed state of the fauces, and especially after the operation of the caustic is begun, is secreted in such profusion as almost to suffocate the patient: he draws much back into the throat, he drives much outward by blowing the nose, and I clear out the nostril effectually with the probe rolled in lint, and then the nostril, raw and red with the violence it has sustained, is so clearly seen, that I have often perceived, upon looking into it, a bud or germ of the polypus still remaining, though very deep in the nostril, and very small. But, independent of this process of clearing and inspecting the nostril, we are able, merely from calculating the depth and distance of the upper spongy bones, and recollecting the circumstances of the operation, to apply the caustic to the roots of the tumor with much confidence; no dismal consequences have I ever witnessed, nor even the slightest inconveniences from its being misapplied.

I never have used a pencil of caustic * in a port-crayon : that, I know, would be extremely dangerous ; but spread the caustic upon lint (I at first spread it upon leather), as I would for making a common caustic issue. First, I fold a piece of lint twice or thrice, and give it a triangular form, and, after pounding the caustic, I mix it with water into a paste, and spread it in the form and dimensions upon the lint, and then bend the lint over the point of a probe, or of a directory rather, the big obtuse point of which carries it, and deposits upon the precise point you wish, fairly and without getting entangled in it. In passing so big a caustic along the nostril, the parts would be cruelly excoriated, were we not careful to guard the canal, which I do by cutting a stripe of sheep's leather, and conveying it high into the nostril with the probe, and laying it flat and smooth along the surface to be cauterized. I leave it there, and turning the caustic towards it, I run it up to the point I design to burn. Upon the slightest sense of disappointment I withdraw both, and begin anew ; but being conscious that I have succeeded, I withdraw the sheath of leather at the same moment that I push up the caustic to the part, and I impress the caustic very firmly upon the part ; for, the instant it touches the naked surface, the eyes fill with tears, the patient draws a long breath, and

* I find, in looking over my notes of cases, that this is not quite correct ; that when I first began to use the caustic, I used it by soaking a large piece of camel's hair pencil in it, conveying the brush along a canula made of a playing-card ; but finding such application quite ineffectual, and having thought of using a port-crayon, I tried it, but even, in the first case, betook myself to the scraped caustic, which, being laid thick, is equivalent to a solid caustic, and yet absolutely safe.

sneezes tremendously, and instantly displaces it: but if you press firm, this first irritation goes off; if you have passed it far beyond the strait of the nostril, and up to that point where always I conceive the roots of the tumor to lie, it seldom is driven away by any future paroxysm of sneezing. It does sometimes happen, that the profuse secretion of mucus carries it down, and the operation being performed at ten o'clock, for example, the caustic is discharged by two or three o'clock; but often I have found the caustic in both nostrils next day at dressing. It will add to your assurance and confidence when I tell you, that, deep as you may appear to yourself to have introduced the caustic, rather beyond the nostril as you would imagine, and on the very verge of its posterior opening, just over the palate, it never falls backwards into the throat, nor ever is swallowed; of the many hundred times I have used the caustic, no such thing ever happened.

There is one thing, perhaps, contributes to its coming always forward, viz. that the moment the caustic is placed, and the sneezing is over, I instantly cram the nostril full of little dossils of lint, which are lying ready prepared, and are quickly handed to me; if this be not done, the nostril and upper lip are severely excoriated and deeply corroded with the caustic; secondly, the caustic piece of charpie, if not supported by others from behind, is apt to be displaced; the nostril being enlarged by the polypus, requires a great deal of lint to fill it; and to prevent any drop of melted caustic or mucus descending this way, I ram the lint hard into the nostril at each dressing. I find the lower dossils of lint discharged (those, I mean, which fill the cartilaginous mouth of

the nostril); the caustic ones often are retained (they occupying the deeper, straiter, and bony part of the nostril, beyond the narrow slit formed by the nasal and spongy bones). The dossils and mucus are hooked out, the mucus picked away, and sometimes the nostril washed with barley-water or oxymel at each dressing. The caustic I apply every second or third day; I often continue this severe process during a whole month, with occasional intermissions; and I confess the whole cure to be so difficult, that, whether from the presenting of polypi already existing, or from the quick regeneration of those already extirpated, I have had occasion, even while using the caustic, to repeat my incision with the knife; and while I am making incisions upon the remains of the polypi, or consuming their roots with caustic, I find it advantageous to clear the nostril, especially in its back parts, by methods almost approaching to rudeness, by wrapping the big iron probe, of a curved form, round with lint, or mounting it with a sponge, and running it thus guarded down the nostril:—I make it so large as not only to fill the nostril, but to pass through it with great difficulty, and by forcing it through the slit of the nostrils, quite back to the palate, I often force off these remains of polypi, which are already half consumed, or imperfectly cut*. These, gentlemen, are the methods which, used with perseverance and courage, have seldom failed me: of many patients whom I have treated, there are very few who have

* I see occasionally the half consumed polypus, or rather the root of it, of a very florid red colour, and touching it with the probe, I feel it hard and granulated: sometimes the opening of the nostril is so exulcerated as to require intermission of the process, and the anointing of the excoriated parts with oil or ointments.

returned to put themselves under my care : of the entire recovery of such as I have not seen again, it would be presumption to speak confidently, but from many I have had the happiest assurances of their continuing in perfect health. Such is my process with the softer, smaller, and incipient polypi, which occupy only the nostrils, and are pronounced mild and benign* : the hard and bulky polypi, passing down into the throat, require other operations ; and to explain these, demands a more methodical enumeration of the various inventions, and, I may say, cruelties, of the older surgeons.

SECOND STAGE OF POLYPUS.

Surgery was at one period rude and cruel in all its operations ; but those used for the extirpation of polypus were so in a peculiar degree. The ancient surgeons, very unlike their successors of the present day, in place of declining (with whatever delicacy or cunning their nature inclined them to) those operations which seemed unpromising, appear to have been inspired, on such occasions, with a barbarous

* I should be sorry to omit mentioning an operation, which has been approved and commended by the greatest practitioners, and has held its place from the earliest times ; it was invented, I believe, by the Arabians ; is described by Albucasis, and was used successfully by La Faye, in the Hôtel Dieu. It is the passing a large seton or cord from the mouth through the nostrils, knotted, at intervals of an inch or more ; the knots are meant to press upon the roots of the polypus, and made larger and drawn up tighter, in proportion as the tumor yields, or the passage dilates. The mechanism of this invention is easily understood by those general terms, and I am not entitled to be particular, as no occasion has presented itself, in which I thought of using this method ; but it is surely worthy of being mentioned, and I can imagine a variety of circumstances in which it may be useful.

courage. The larger polypi, depressing the palate and extending towards the throat, seemed to them to vindicate every degree of violence. They attempted the extirpation, sometimes by the most cruel cauteries, oftener by main force. They, if the polypus was long and pendulous, tugged at it with merciless rudeness; if beyond their grasp, they consumed it with heated irons. This has been so little reformed by modern surgeons, that when they have not quite abandoned the patient, these are the very methods they have used. I know not by how many ways, all desperate, all compensating the want of skill by force and cruelty, surgeons have shown their alarm, and terror, at this disease: by tearing with fingers and forceps, by cutting with knives and scissors, by burning with heated irons, or destroying with caustic, by rasping the polypus with knives fashioned like saws, by slitting the nostrils, or dividing the palate, to get at its root. Yet, I am confident, that by explaining some of their cruelties, I shall teach you more, both concerning the varieties of the tumor, and its relation to the passages of the nostrils and throat, than I should by describing the simpler methods which I prefer, and am accustomed to practise. The celebrated Richter narrates the case of a peasant who had a big and hard polypus filling the nostril, apparently for no other purpose than to explain his method of using the actual cautery, a method far exceeding in cruelty that of Celsus. Celsus, in the case either of ozæna, or of polypus, introducing a writing reed, and along that a slender heated iron, till it reaches the bone, burns the disease, purging and cleansing the burnt part with honey and verdigris: or at once he slits the nostril, from its opening

up to the nasal bones, for the surer application of the heated iron ; and deliberately sews up the nostril, after this pleasant operation, dressing the eschar and the slit of the nostril, each according to its nature. The polypus in Richter's patient was perfectly round, exceedingly hard, and so entirely did it fill the nostril, that he could find no means of passing the blades of his forceps to the sides of it. Besides the size and hardness of the tumor, every thing was unfavourable ; the slightest touch of any instrument, the slightest concussion of the head by sneezing, &c. was followed by profuse hæmorrhage. These hæmorrhages, and the irregular and ulcerated form of the tumor, were imputed by Richter to the rash proceedings of a quack, who had tried to consume the tumor by caustics. The man was enfeebled, pale, and bloated ; his breathing was laborious, he could scarcely stand alone ; he had suffered daily from loss of blood, and in the last attempts to noose the polypus, his strength fell so low, that this, together with the firmness and size of the tumor (which absolutely precluded the passing of even the most delicate instrument), forbade every attempt by the usual methods. Though the usual way of applying the cautery, viz. by consuming first the most pendulous part of the tumor, had failed, Richter conceived hopes of destroying the polypus, if the cautery could be so used as to consume from the centre. This unpromising theory he put in practice, in a very ineffectual and cruel manner : he passed an iron canula, of an inch and half in length, up the nostril, wrapped round with wetted rags, to prevent the communication of the heat, pressing its point against the centre of the polypus, and passing along this tube, a trocar four inches long, such as is used

in puncturing the hydrocele, heated red hot. Having plunged the heated trocar into the body of the polypus, to the extent of two inches, the boiling moisture, notwithstanding his precaution of the wet rags, distilled so profusely along the nostril, that it burnt it. Richter, after this mode of operation, seems to have abandoned his patient, with very little concern, to the care of others. The man suffered, after this, intense headaches, but he had no fever; great quantities of pus distilled from the nostril, and the polypus shrunk in size, so that he could once more breathe; but what became of him after this, Richter knew not. He consoles himself with this reflection, that the effects of the cautery, in this case, were by no means slight, and that its effect must always be the same. "The polypus," says Richter, "was so far lessened in size, that the remaining part could be more easily extracted or noosed; nor do I despair of finding, sometimes, the polypus entirely consumed by the suppuration." Such is the method of destroying polypi by cauteries, little used by modern surgeons; but universally, in those times when fire superseded blisters, setons, issues, incisions! and nothing but fire was used for headaches, white swellings, hæmorrhages, rheumatisms, tumors! Whatever, in short, was to be done, which could not be done by incision, was (to use the words of Hippocrates) "to be done by fire." In these times, when they were cruel in all their proceedings, it was natural to be peculiarly so in this disease; and they must, I have no doubt, have been successful sometimes, in proportion to their cruelty. This method, cruel as it is, hardly deserves the coarse sarcasm of Dionis, who says, contemptuously, "*Par canule qu'ils posoient sur la tu-*

meur, ils portoient un bouton de feu qui brulant cette chair en faisoit un gresillement comme quand on rôtit de boudin*.”

The full-grown polypus, filling at once the nostrils and throat, is usually single, is of a very firm and cartilaginous consistence; resists the knife, and the forceps actually bend and break upon it. It is surprising how much a large polypus resists the most violent pulling, such as you would imagine might pull away the spongy bones, or whatever other part the polypus was rooted in. I have allowed, “that every operation for unrooting a polypus must be cruel and unrelenting to be successful!” And the operations which I am now going to describe differ, it must be confessed, very little from the method of extraction by forceps. When the polypus has attained to such a size as to be crushed by the fingers, it has been the custom to extract it by whatever hold could be obtained, a practice which has prevailed till very lately. Mr. Morand is reported by de la Faye to have unrooted two very large polypi in this manner: by passing one fore-finger into the nostril, another into the mouth, behind the soft palate, he has got such hold of the polypi, as to shake them from side to side, till he has so loosened them from their roots, that the patient spit them out piece-meal. This method seems successful; one patient at least, we are assured on the best authority, was entirely cured†.

* Albucasis affected to cure the polypus by caustics, not even pressed against the tumor, but applied to the forehead. He applied three, one in the centre of the forehead, and one above each eyebrow, which must have made it like the perforated end of a cocoa nut.

† Il y a quelque tems que M. Morand a emport avec les deux doigts deux polypes fort gros. Il mit un doigt dans la narine, et un autre dans la bouche par derrière la cloison, et en partant ces

This method of moving a polypus backwards and forwards by the fingers, or pulling and twisting it by crow-bill forceps, or, when these methods failed, drawing it out to its utmost length and cutting it across with scissors or a crooked knife, was the operation aimed at by all the old surgeons, and which, one way or other, they usually accomplished. Now, it appears to me, that I should enter a little into the detail of all this, for upon considering attentively the circumstances of such an operation, you will find, that they insensibly explain to you the depths and distances, and relations of parts, both diseased and natural, and you will perceive, from this kind of experience, what parts you can see, what reach with the knife or finger, what you can safely perform, and how far the hæmorrhagy, the suffocation, or the sickening of the patient may interrupt or prevent your operations.

The first operation I shall explain to you is that rude one performed by Meekren; in which, after many violent struggles, and actually breaking his crow-bill forceps upon the polypus, he was obliged, in the end, to cut it across behind the velum.

“ A lacquey of Mr. Six contracted, in consequence of a blow on the nose, such difficulty of breathing, as created the most intolerable oppression; and the complaint in process of time arose to that height, that he could not swallow without extreme pain.

“ This lad had consulted various surgeons and physicians. Some told him the disease was incurable, and refused to prescribe; while others presumed to

deux doigts de côté et d'autre, il détacha les polypes que les malades crachèrent à différentes reprises. Cette méthode eut un bon succès : un de ces malades s'est trouvé guéri parfaitement.

say, because he spoke imperfectly, that it was a venereal affection of the nose. One remarked, that the disease must be referred solely to the nose, because the profuse hæmorrhages and the acrid sanies flowed only from the nostrils ; to which he applied various remedies without success. His master, very much interested in the fate of this young man, neglected no occasion of consulting, while there seemed chance of a cure, and among others, he consulted me, and my colleague Dr. Florian.

“ Upon visiting the patient, we found not only the nostrils crammed with a firm polypus, but the fauces also straitened with a fleshy mass, heavy, and of a cartilaginous hardness, extending behind the uvula, and oppressing the muscles of the pharynx. We agreed that there could be no cure but by extirpation, and advised especially, that the firm mass which hung downwards in the throat should be torn away with forceps.

“ The servant and master both consenting most willingly to this operation, we prepared him with laxative potions, continued for a few days ; and after these few days of preparation, the master and Florian were present at the operation, which I attempted in the following manner. I had neglected nothing that might be useful in suppressing the hæmorrhagy, or in extracting the polypus.

“ I had prepared a styptic powder of galls, lapis hæmatitis, and Armenian bole, and to apply it effectually we had prepared proper tents and dossils, and long thick pieces of soft sponge, to which we had fastened strong ligatures, by which, in case of their falling backwards into the fauces, they might be drawn upwards again ; and these we dipped in white of eggs

and lemon juice, that the styptic powders might the better adhere to them.

“Then we began the operation, as had been concerted, placing the patient, who was full of courage, in a strong light : then seizing the polypus, which was of the size of a hen’s egg (but somewhat flattened), in a pair of crooked forceps, I pulled and twisted it in various directions, endeavouring, with much force, to tear it from its roots, but in vain : the polypus remained entire ; the forceps, though particularly strong, were broken ; the patient, who had suffered with great constancy, felt as if all the bones of his head were torn asunder with the violence ; a profuse hæmorrhagy came on, which ceased however spontaneously : five or six times did we return to the charge, attempting, with great force, to tear away the polypus, but still in vain.

“Thus disappointed in all our attempts to extract the tumor, the force we had used having only the effect of making it hang somewhat lower in the throat, we proceeded to cut it off with shears, as high as the uvula, which was in danger of being wounded, would allow.

“The polypus being thus amputated, no hæmorrhagy ensued ; for the blood, which flowed on our first attempts, was from the nutritious vessels at the root of the tumor, whereas in the cartilaginous body of the tumor there were no such vessels.

“Proper linctuses, and gargles, were prepared for the swelling, and pain of the uvula and fauces, which the patient did not cease using night and day. For the continual watchfulness and pains of the head, we prescribed emulsions ; but with no effect, till opium and alexipharmics were added. He took freely of

nutrient foods to restore his strength : on the eighth day a profuse hæmorrhagy took place from the nose and fauces ; but from this time the patient daily gained strength, so that in the space of three weeks he was completely cured, and more robust and healthy than ever.”

Meekren, and his helpers, had struggled long and violently, often lost their hold, broke the forceps, and endangered the palate ! so much for the impetuosity and force with which he had pursued his purpose, and for the strength of such a tumor, and the violence which those seemingly tender parts will bear ; and though his expressions imply that this young man was radically cured, the thing seems physically impossible : he had not unrooted the tumor, nor even shaken it : it had resisted all his violence : he cut it across behind the palate, and its root, and much of its body must have remained.

The operation I next relate to you, from Abbé Ceers, was better conducted, and, I doubt not, very successful ; the young man who was the subject of it having survived ten years in perfect health.

“ A dignified clergyman of the duchy of Juliers (ex agro Juliacensi) laboured under the most enormous polypus I had ever seen ; for it hung down from each nostril, so that if he chanced to fall asleep, or but to slumber, otherwise than with his mouth wide open, he was in danger of suffocation. A celebrated physician of our city having been consulted immediately before me, declared that he would not touch the tumor, even with one finger, till the patient had paid him down three hundred crowns ; but when I myself was asked, I protested that I would not receive one sous, till my patient had been at least three years,

not only free from the polypus, but from every symptom and remnant of the disease. With the surgeon who was joined with me in this case, a bargain was struck for twenty-five Spanish crowns. The pendulous parts of the polypus were pulled away, with a degree of hæmorrhagy very unusually profuse, which I confess did alarm me, and which we stemmed with the juice of quinces and other herbs. Next I cleansed the patient's body with purges and bleeding. Having, on the third day, reached the root of the æthmoid bone, and extracted many particles of it, we imagined our work nearly accomplished: but finding that the patient did not breathe with that perfect ease which we expected, we looked down into the fauces, and there saw, hanging behind the uvula, many such pedicles reaching into the pharynx, as we had before seen protruding from the nostrils. These we pulled away by the help of the crow-bill forceps, a little crooked, placing a basin below, that the blood might not run backwards into the trachea, but be spit out. When nothing more of this work remained to do, we introduced into each nostril large leaden probes (drawn by a goldsmith), and having brought them out through the mouth, twisted and turned them in the nostrils, till, upon holding a lighted taper to each nostril, we found the passage perfectly free, and the bystanders acknowledged that the polypus was gone. To prevent the disease returning should, I assured them, be my particular care."

But of all the examples of successful violence upon record, none is so well calculated to prove what the parts will suffer, to give the lie to all the imaginary fears of endangering the brain by violence done to the spongy bones, while extracting polypi with for-

ceps, as that which I am now to lay before you. It will at once suggest many practical reflections, and teach you much of what you ought to know familiarly, concerning the relation of the tumor to the passages of the nose and throat.

Mr. Manné, a respectable surgeon of Avignon, was the operator, and he related the case in a small volume, published at Avignon, anno 1747. Not contented with the ordinary means of extracting the polypus, finding even the strongest crow-bill forceps unavailing, he transfixed a large and cartilaginous tumor with many ligatures, each of which successively he twisted round the body of it, and with the help of these, used like a halter, and by pulling upon the projecting part of the tumor, and pushing at the same time that part of it which he could reach by introducing the fingers into the throat, he delivered the patient of an enormous massy polypus, which, in bolting through the nostril, made a noise like that of uncorking a bottle! The patient, from confusion, pain, and loss of blood, fainted; while the numerous assistants were left in a degree of astonishment, from which they did not soon recover: but these, with many other points, you will best learn from the narrative of Mr. Manné, which thus concludes:

“In the presence, then, of this respectable company, I began my operations, without having recourse to the gag, or the speculum oris, used in the former operations: I placed the patient opposite to a window, and reclining his head a little backwards, I entreated him to open his mouth wide, which he did very courageously; I then took a crooked bistoury, passed it betwixt the velum pendulum and the tumor, and slit up the velum from the side of the uvula to the

palate bones, and proceeded then to the tumor itself, which was wedged in the throat. It was so firm, that it resisted the knife, as the attendants will testify, who cannot but remember the quantities of blood that flowed after each incision. The moment I began an incision, the flood of blood suffocating the patient forced me to desist; when it ceased I renewed my attempt, only to be interrupted by a new hæmorrhagy: till at last, at each incision, in consequence of the hæmorrhagy that ensued, the patient fainted, so that we were obliged to allow long intervals after each stroke of the bistoury, lest the patient should actually expire.

“The assistants were careful during all this time to support the patient with spirituous liquor, and occasionally spoonfuls of nourishing soups; and thus from incision to incision, from hæmorrhagy to hæmorrhagy, after many paroxysms of faintings, did I, at last, partly by the knife, partly by tearing, separate completely this mass of tumor, which lay in the throat, and which I immediately delivered to the bystanders, that they might examine its extreme firmness and semi-cartilaginous nature. The patient, restored as it were from death to life, had still sufficient strength to walk from my house to the suburbs, where he lodged, when he was presently put to bed, and a proper diet and regimen prescribed.

“It was not fit that we should comply with the spirited and resolute request of this young man, who besought us to finish our operations, and deliver him at once of whatever remained of the tumor. I thought it prudent to allow at least a few days of rest and nourishment, to repair this loss of blood.

“After three days, the slight fever excited by the

operation having subsided, and his strength seemingly recruited, I resolved to begin my operations anew. This was in October, 1747: I placed the patient with his back resting firm, and his head reclined and fixed: I knew too well the firm and cartilaginous nature of this tumor, to think of extracting it with forceps, which would but tear it into morsels, leaving perhaps, after the laceration of the nasal portion, and of that which hung backwards in the throat, an intermediate part, which would still obstruct the nostrils, and occasion endless operations. I saw the nostril, besides, too completely filled with this polypus to admit my forceps, and the polypus itself too firm to be grasped in them: I had experience sufficient moreover of the partial and imperfect success of the forceps, in the case of Jacques Grenau; I therefore resolved upon a more decisive and more direct method, of unrooting the whole at one pull.

“With this design, taking in my hand a needle remarkably curved, threaded with a strong waxed ligature, I transfixed the polypus as far back in the nostril as possible. I then cut the needle away from the ligature, and (the ligature being double) I took first the two lower ends, and tied them firm round the lower part of the tumor, and the two upper ends I tied in like manner round its upper part, and then taking one end of each, viz. of the upper and lower ligature, I twisted them on one side, I tied and twisted the two other ends on the opposite side, and thus having transfixed the centre of the polypus, and twisted these numerous ligatures round the sides of it, I had got a hold which could not slip: I grasped the four ligatures, twisted them into one, and pulling by this hold, I brought the polypus so low, that not

merely the part thus transfixed with the crooked needle, but half an inch more of the polypus, appeared without the nostril. I took now a second crooked needle, transfixed the polypus with a second double ligature, like the first, tied and knotted it in like manner, and having thus got a firmer purchase, I twisted the four ends of this ligature along with the first, round the tumor; and now shaking the whole mass of the polypus from side to side, then moving it with a rotatory motion, then pulling from right to left, and next reversing that motion, by moving the mass from left to right; in short, by moving and shaking the polypus in every possible direction, I sought to disengage it from its connexions, pulling towards me always with such strength, as to make the tumor follow every lateral motion, and yet with such a measured force, as to prevent the ligatures breaking; for had that unfortunately happened, the tumor itself would have receded into the nostril, while a fragment only would have remained in my hand.

“By successive and regulated efforts, I so far succeeded, as to elongate the tumor still more; an inch more of its length appeared without the nostril; I struck a third double ligature through the polypus, which I twisted as formerly, and added to the others; and with this new purchase, I pulled so successfully as to elongate the tumor still more; and transfixing it again with a fourth ligature, as deep as possible within the nostril, I obtained, by pulling with the whole sixteen ligatures inconceivable power and purchase.

“I was now on the point of extracting the polypus by the roots; and by the happiest chance observed a trifling circumstance (for the most trivial circum-

stances are, in the critical moment of an operation, of the very last importance) which contributed greatly to my success : having introduced two of the fingers of my left hand crooked, into the throat, to feel whether the hold I had upon the nasal branch of the polypus affected that within the fauces, and whether the guttural part of the polypus was of such a form as to pass easily back again through the opening from the throat to the nostrils, so as to follow the nasal branch when it was extracted, I felt distinctly, that by pulling the ligature which surrounded the nasal branch of the polypus, I not only moved at each pull, the branch which hung down into the throat, but also was sensible that this lower branch (the branch which I had formerly cut with the bistoury) consisted of two tubercles or heads, greatly exceeding in size the posterior opening of the nostrils. With my fingers of the right hand, twisted among the ligatures surrounding the nasal branch, I pulled upon it ; while with the fingers of my left hand, thrust into the throat, I pushed back towards the posterior opening of the nostril, the tubercle which was nearest to it ; then, by a second effort of the same kind, I forced the second tubercle to follow the first ; and being sensible that both were fairly entered into the passage of the nostril, I continued to thrust with the fingers of the one hand against the guttural part of the polypus, pulled with the other upon the nasal branch, and redoubling my efforts, and increasing the force, in proportion to the progress of the polypus, it, after much struggling, and many repeated endeavours, bolted (after one final effort) so suddenly out of the nostril, that the noise was like that of uncorking a bottle !

“The moment the polypus was torn away, you

would have thought the patient would have expired, the blood bursting out in a full flood from nose and mouth : but as the blood burst out thus suddenly, it ceased as instantaneously ; for it proceeded chiefly from the vessels of the polypus distended by the compression, which were no sooner emptied than they ceased to bleed.

“ The spectators did not soon recover the amazement with which they were struck at seeing so enormous a mass of tumor issue from so narrow a passage. This polypus was covered with a membrane, very white, smooth, and polished, with an infinity of small vessels circling upon its surface ; and its surface was dotted with an infinite number of bloody points, red with drops of blood, denoting the manner in which it had adhered to the pituitary membrane.

“ No sooner was the lad delivered of the polypus, than he straightway breathed through that nostril freely, and was as suddenly relieved of an insupportable headach, with which he had been night and day tormented for more than a year. He recovered his sense of smelling ; but, what is more singular, he recovered at the same time the sense of tasting, which he had entirely lost. After this second operation, we washed out the passages with detersive and vulnerary injections, to which spirituous tinctures were necessarily added, to correct the putridity of the foul and very foetid sanies, which, by its horrible foetor, declared the disorder of the parts produced by this tedious disease, and the recent violence done to them.

“ Yet the patient was in perfect health, weakness excepted ; he was free from fever : he slept as if he would never awake ; and when he rose, it was with

the appetite of a famished creature, ravenous for food. But the attendants were inexorable, and never permitted him to exceed the diet prescribed for him.

“Two days, and no more, had passed, when the patient all at once observed, that he had no longer that perfect freedom in swallowing and breathing, which the operation had restored him to so suddenly. He was sensible of a new obstruction in the throat, little differing from that which he had so long endured. I visited him on occasion of these new symptoms, and I will ingenuously confess, that if I was astonished at the size and nature of the first polypus, my surprise was inexpressible, when I found the throat choaked anew, with a polypus of such enormous size, that it seemed as if not a particle of the first had been actually destroyed. I, without loss of time, convoked the physicians and surgeons who had witnessed the first operation. They were, I believe, not a little astonished to see, apparently, the individual polypus which they themselves had assisted to extract, re-occupying its proper place. Curiosity led us to examine how this could be, and no conjecture seemed more probable, than that this new polypus had fallen down from the upper and back part of the nostrils, where it had been squeezed up by the former polypus, and nixed in the narrow cavity: the extirpation of the former, it would appear, had made way for this falling down.

“I did not long hesitate how to act, but waited only the return of my patient’s strength, to cut off this polypus also: for I was afraid, in his present weakness, of the hæmorrhages inseparable from such operations. I allowed, however, only six days to pass over, when convoking the same surgeons who had

assisted me at the former operation, I, in their presence, on the third of November, cut out from the throat, a portion or knob of the new polypus, represented in the drawing, which I accomplished now with much less pain, because it hung by two pedicles, and was softer than the former; the hæmorrhagy was moderate, and nothing to be compared with that of the former operations.

“ The patient instantly felt the benefit even of this partial extirpation, for the throat was entirely freed, and he even began to breathe through the nose: but this quiet state he did not long enjoy, for before morning a new lobe of the polypus had descended, occupied the place of that just amputated, and all his difficulties and distresses returned with the tumor. Nothing remained for me, but to relieve the patient, by cutting off all the heads of this Hydra, or abandoning altogether an operation, in which I had already achieved so much, which had cost myself such anxieties, and my patient so much pain and suffering. My spirit was so raised, and the patient himself so full of confidence and courage, so well resolved to submit himself to whatever I thought fit to do, that it was determined to cut this polypous mass once more, and to the quick. But I had found such advantages in allowing an interval betwixt each operation, that I imagined I could not, on the present exigency, act more prudently, than to allow the patient a short respite.

“ But while I was meditating this new operation, the singular nature of the case drew together all those, who had hitherto, in compliment to me, or through charity towards the patient, watched the course of his disease, and, by perpetually thrusting

in their fingers, touching the polypus, torturing the nostril, searching in various ways, some to ascertain its size, others to feel for its root, others with the hopes of reaching its pedicle, and disengaging the tumor, without having further recourse to the knife, the roots were finally so torn and lacerated, and the body of the tumor itself was so compressed and bruised, that in a few days it began to shrink and shrivel, fell into suppuration, became rotten and foetid, and dropt away piece-meal in small portions, one of which, however, was as long and as large as a thumb : by this wasting of the tumor the patient was freed of it in a few days, without the help of the knife or cautery, nor did I choose to meddle with the roots of the tumor, both because I thought that where nature had done so much, it was wrong to interfere ; and because I could perceive that the root or basis of the tumor was melting away slowly of its own accord."

A narrative so very interesting as this, should not be dismissed slightly ; it suggests various useful remarks ; it opens up to us much of the rude practice which prevailed even in the last century, of slitting up the palate, pulling with great iron forceps, bolting out the tumor at the same time, by pressing behind the palate with the fingers ; extracting by main force of pulling, with the help not unfrequently of a great crooked knife.

The merit of the operator, in this singular case, is least of all to be passed in silence. The enterprise was bold, manfully conducted, and attended with success every way gratifying. Never, perhaps, was there a more desperate situation than that of the patient ; the face deformed, the cheek in a state of suppuration, the gristle of the nose perforated, the

polypus protruding through the opening of the nostril, filling the cavity of the nose, and extending to the throat: the disease neglected for two years; the patient tortured with pain and confusion of head, dying of hæmorrhagy, and soliciting the surgeon to perform any desperate operation that might promise relief. The polypus of that firm and cartilaginous texture, which all writers have agreed denotes a cancerous disposition. Even such a tumor was torn, mangled, cut, one way or other extirpated, and finally cured! From this what should we infer? First, that if there seem something of good fortune in that perpetual laceration, with the fingers of inquisitive visitors, by which the patient was ultimately delivered by ulceration of the polypus, or its remains; still it was that of good fortune which the bold and skilful deserve. You know now by experience, in this one case at least, that operations for the cure of polypi, to be successful, must be in some degree cruel. Operations within the narrow passages of the nose and throat, like those of midwifery, where we are forced to introduce the hand and instruments, require perseverance, even violence and determined courage; and in both kinds of operations, these natural passages bear, without essentially suffering, a degree of violence, which those unaccustomed with practice would be afraid to use. Hæmorrhages from the womb, or from the nostrils, and the violence necessary in extracting a polypus, or delivering a woman, are such as would terrify a timid man, and prevent him from performing his most necessary duties; whereas, to the man of experience and courage, these considerations are but an incitement to do his work resolutely and speedily.

Often the methods of the older surgeons are so incorrectly, or at least so indistinctly related, that we learn little more than this, that wherever the polypus was sufficiently large to project, they could never resist the desire of extracting it by main force : they seldom used the knife, or even cauterized the roots of a polypus. But Purmannus appears to have approached to a better manner than any of his predecessors. You will be sensible, from the case I now relate, that, while his assistant or apprentice pulled upon a great polypus, which hung pendulous from the nose, as large as a Muscadel pear, he introduced the forceps towards the root of the tumor, and pinched it off : and indeed it has often occurred to me, that should I ever fail of extirpating by the ligature, those great polypi which tend backwards to the throat, and depress the palate, I should operate, not as these gentlemen have done, by slitting the palate, by cutting across the tumor, when it appears behind the palate, or pull with great forceps introduced by the mouth ; but, in examining the disease, I should, by feeling with a bent probe, or various shaped hooks, search the nostril for the root ; if I could then hook the neck of the tumor, so as visibly to move the body where it appears in the throat, I should be sure of my stroke, and proceed with confidence ; if, fixing a sharp hook into the tumor behind the palate, and passing a blunt one into the nose, I could move the tumor alternately upwards and downwards, I should then be able, either by pinching with the forceps, to pinch off the root, as Purmannus seems to have done ; or rather, following my usual method, I should pass one of the knives, small and bistoury-shaped, such as I have hitherto used, deep into the nostril, and cut

the root there: and take notice, that the surgeon who, in handling a great guttural polypus, reaches its root by the nose, is sure of cutting it in the narrowest part of its neck, close by the spongy bone.— This operation, if dexterously performed, would be speedy, almost painless, and as effectual as if the tumor were cutaneous; and the hæmorrhagy would be very slight indeed, and easily suppressed by the plugs. I have constantly observed, that the hæmorrhagy which is dangerous or fatal, is that only which proceeds from universal ulceration, and an extensive surface; not that it proceeds from the small root of a polypus, or the stroke of the knife.

There is yet, among the practices of the older surgeons, one which, though the most obsolete, deserves, I think, the attention of a practical surgeon in an especial manner; because it relates to many of his operations, and may, I think, suggest occasional methods very useful; it is an operation not very distinctly defined, otherwise than by its name, which expresses the purpose of it, viz. *The Compunctio Polypi*, or, as I think I have somewhere read it, *Comminutio Polypi*; it was a lacerating or transfixing of the root, so as to kill the body; and though it seems to have been performed according to no very regular nor established plan, is yet commemorated by various authors. Heister mentions it in very brief terms: “There are yet several methods,” says he, “of removing polypuses; those which are recent will sometimes shrink and disappear, by repeated puncturations or scarifications with a scalpel or lancet, as Severinus asserts he has experienced.” Hildanus gives the title *De Compunctione Polypi* to his sixth chapter, and speaks respectfully of this operation of

Severinus. He describes it as an operation performed by itinerants rather, whose method was not expressly known, than by regular physicians, and says, “The report goes, that they tie together three long needles, and, placing the head of the patient in a favourable posture, they scarify the tumor with the points. They then anoint the punctured part with oil. No ill consequences are found to ensue; the process is repeated from day to day, and the polypi shrink and waste, till the patient is in a little while restored to perfect health. Such,” says Hildanus, “is the method suggested by Hierocles, a celebrated writer in the veterinary art. Nor do I see why an operation so gentle should not be transferred to ours?” Nor can I imagine a reason against a practice so likely to prove successful; so generally believed among the older surgeons to be profitable in the small spongy and bloodless polypi, which occupy the nostril alone.

It is reported, that the method of killing a polypus by a ligature, drawn high round its roots, and tightened from day to day, is of ancient date. But though I willingly commend, and as willingly borrow from the works of the old surgeons, I find nothing to praise in their manner of applying the ligature, nor indeed any thing but their boldness and courage, in grappling willingly (sometimes, it must be confessed, after having bargained for their thirty or fifty crowns) with the most bulky and formidable polypi. Ligatures, no doubt, they did apply; but assuredly they had no other design, than to save that blood, which the patient could not but lose when they cut them off with their bistouries. The design of pushing up the ligature to the basis of the tumor, never entered so far into their system of operating, as to lead them

to think even of pushing the loop up to the root with a forked probe. Glandorpius passed a thread of strong silk round the polypus, drew it tight, secured it with a knot, and then cut off the tumor close to the ligature. "But to perform this operation successfully," says Heister, "it will be necessary to extract the polypus as far as you can out of the nose by pliers. This too must be done gradually and gently, lest you break off the tumor before you have made the ligature; it must be left upon the part after your abscission, till it is spontaneously digested off; and thus you cure the disorder without running the risk of a profuse hæmorrhagy, which is sometimes such as to kill the patient, especially when the polypus is removed by avulsion." Such were the purposes of the ligatures, used by the older surgeons; it was a tourniquet, merely intended to prevent the loss of blood in their rude amputation of the tumor. Heister seems to have had a consciousness of the imperfection of this method, and to have sought a more effectual manner of fixing the ligature. In the case of an old lady, afflicted with polypus, he struck his ligature through the body of the tumor within the nostril, but far from the root.

But all these methods were violent and rude. Seldom did the older surgeons affect gentle means; never, indeed, that I recollect, except in this solitary instance, when they stood in the point blank danger of disgrace from hæmorrhagy, when cutting with their crooked knives.

They scrupled not to slit up the nostrils; and the cleaving the palate, with the first stroke of their bistoury, from the uvula to the bone, was no uncommon way of making room for cutting the polypus itself

at the second stroke. "Before I conclude," says Garengéot, "I must mention to you, that often polypi so entirely obstruct the nostril, as to prevent the possibility of introducing instruments to grasp the tumor; and in such circumstances the surgeon has no choice, but must dilate the nostril with a cutting instrument. The sole difficulty is to know at what point, or in what direction. These are polite terms, "dilating the nostril with a cutting instrument," for slitting it up with a bistoury; and where the only difficulty was, about the direction, that would not stand long in the way of a surgeon of this complexion. Indeed, Garengéot does not long refrain from the plain blunt word of slitting the nostrils, "Il faut fendre le narine dans toute la longueur de ce pli."

It seems to have been their universal rule, when a bulky polypus depressed the palate, to extract it by the mouth; and the case mentioned by Heister and Garengéot, with tokens of approbation, was that of a boy of thirteen years of age, from whom Petit, in presence of many surgeons, and to their great astonishment, extracted, with an iron scoop and his fingers, a fleshy tumor, resembling in size and firmness the gizzard of a turkey, of a triangular form; and they chiefly praise him, because, in preparing for this, he performed the preliminary operation of slitting up the soft palate in two places. Nay, great surgeons contended for the honour of this notable invention. M. Manné disputed it with Petit. This operation I once saw performed by a country surgeon, without any such rational design, from mere simplicity.

I shall explain what consequences I apprehend

from slitting the palate, by detailing an opinion given in the case of a fine boy, about fourteen years of age, whose uncle, a gentleman from the West Indies, brought him to me. The sole question proposed to me was, whether, the palate being grown together, I could not perform some operation, by which he might be made to speak with a more sonorous voice, and swallow more easily?

NARRATIVE.—“ This young gentleman was about fourteen years of age, of a slender and delicate habit of body, born in the West Indies, and being nursed and kept by his father’s black servants, was, without the family being informed of it, deeply infected with the yaws, at the tender age of three years. Though cured by the plantation surgeon, and now enjoying the most perfect health, the condition of his throat proves, that he must have lived long in a sad condition, and must indeed have come into the surgeon’s hands in a desperate stage of the ulceration; his uncle believes that the cure was accomplished by calomel and the decoction of the woods, and that all the ulcerations have been for many years healed. The boy is spirited and resolute, and says, that to recover the natural, I may say the human sound of his voice, he will stand stoutly to any operation I please to perform. The adhesion of the soft palate to the back of the pharynx, by which the posterior opening of the nostrils is closed, may easily be dissected; there can be no hæmorrhagy, no danger, little pain: should this be done?

“ Description of the state of the palate and pharynx.—To resolve this question, allow me to describe to you the very singular condition of these parts. The whole of the throat must have been in a state of

complete ulceration; but it had affected more the membranous parts than the glands; for the tonsils are entire and perfect, while the soft palate and pharynx have so adhered, that you can hardly imagine they ever had been separate, or that the appearance is any thing but a mal-conformation. The whole circle of the fleshy palate adheres to the back part of the pharynx; and it is not an adhesion slight, or superficial, of the edge merely; but the very substances of the velum pendulum and of the pharynx are so mixed and incorporated, that you could not believe them ever to have been otherwise. If there be any distinction of substances, it is only that which is marked by a firmer and whiter line, running in a semicircular form; the much thickened and ulcerated flesh of the palate seems by swelling to have been pressed as close upon the back of the pharynx as if it had been held firm by stitches. There is not the slightest vestige of the openings towards the nostrils: one flat curtain of firm flesh, hard as cartilage, extends from the posterior arch of the palate bones, and declines insensibly into that part of the tube which we call the back of the pharynx, and by its inclination, like a pent-house, makes a perfect and imperforated arch. In the middle of this arch, there is a whiter spot, which marks the place where the uvula had been, which has by ulceration been entirely destroyed. The centre of the arch, where the uvula or pap was originally, has adhered with particular firmness; and from that white spot, there runs down in the centre of the back of the pharynx, a white ridge or prominent line, or rapha, which feels not merely hard, but absolutely cartilaginous; and on the face of this flat curtain, formed by the adhesion

of the palate, and a little towards each side, appear the tonsils, their flat surfaces and excretory ducts turned directly towards you ; and as the arches of the palate are comprehended in the adhesion, nothing in any degree resembling the natural structure of the throat is to be distinguished ; there appears but one flat plain partition, extremely firm.

“ Advice.—The boy’s swallowing is imperfect, from want of contractility in the cicatrized parts, to embrace closely the morsel, as it descends from the mouth into the throat. His voice disgusting, because the air and sound are prevented from passing, as in the natural state of the parts, through the nostrils, and circulating among the nasal cells, which give the voice its resonance : but his condition is without a remedy. I am assured of this by reasoning, and by experience : first, the use of the velum is now irrecoverably lost ; it serves in its natural state as a valve, moveable, and muscular, which, while we are speaking, directs a due proportion of the air through the nostril ; and, while we are swallowing, claps so closely over the posterior openings of the nostrils, as to close the throat above, and prevent the food or drink, when pushed from the mouth into the pharynx, from passing up into the nose : but the part is now so indurated by the ulceration, that its muscles are no longer moveable, the substance of the palate too is indurated ; the surgeon might, with a knife and long crooked probe, make first a central opening, and then dissect towards either hand, till he had disengaged the whole of the velum ; but it could never again be a flexible valve, moved by the contractility of its own muscles : the opening would remain with rigid edges, round or slit-like, according

to the manner of healing ; all that were divided would retract, leaving a wide opening into the nostrils, but no valve to cover it ; the patient would be in the condition of these unfortunate persons, in whom the older surgeons cut off (as they usually did) or slit up the soft palate, to make their way to polypi of the nostril ; whatever he did not swallow with great precaution, rather by letting it glide over his throat, than forcing it by the usual effort, would rush upwards into his nose ; and his voice would resemble that of one who had lost his palate by the venereal disease. When all the air, or much of it, goes out by the nose, there is not enough passing through the mouth to be modulated into distinct sounds ; thence it happens that the voice is more guttural when there is too large an opening towards the nose, than where there is none. I know well what effect will result from such a rigid opening in the palate, not secured by any moveable valve, for I have several times seen such adhesions of the palate to the pharynx, with partial openings, rigid and continually open, such as would remain in this boy after any form of incision ; and in those patients every mouthful of food or drink swallowed rashly went upwards into the nose.

“ I counsel you, neither to request, nor allow any opening to be made in this adhesion, which so entirely and happily closes the nostrils : had any ignorant surgeon done such an operation (and it is one into which one might be easily seduced), he would have been disappointed and shocked at the ill consequences of what he had done so unpremeditatedly. Should you ever be so unwise, as to require a surgeon to do an operation, which it is but too easy to perform, be assured, that the part can never be closed again ;

the edges of the incision will heal, the opening will remain, and your nephew will never again swallow comfortably, nor speak intelligibly.”

To these rude and cruel methods, the best of us may need to have recourse ; and it is a merit to bend up our mind to such cruelties, for our patient's safety : but when the polypus has attained this size, and fills the nose, and depresses the palate, its bulk is peculiarly favourable to the operation of the ligature ; and as it has not yet destroyed the bones, the operation is almost always successful. I like to be diffuse in my descriptions and character of diseases ; in my directions for operating, I at least wish to be perspicuous and concise. You would imagine the apparatus for applying the noose round a polypus to be multifarious and complicated ; you would at least imagine the tubes and other instruments of Levret to be essentially necessary ; and cannot, perhaps, at this moment imagine that any contrivances but what were extremely ingenious, could be at all successful : it is quite otherwise. I have often tried those much reputed instruments, with perfect confidence in them, and uniformly I concluded with my fingers the operation which I had tried in vain to perform with this apparatus. The operation I am going to describe requires address, but no instrument great or small ; indeed the instruments are so described, that I am persuaded those who write in praise of them never use them. I require nothing but a piece of fine silver wire, and my fingers ; I have frequently used catgut, but always found it soften, untwist, and become altogether unmanageable. Ligatures of wetted thread are quite flaccid, and difficult to apply ; a

silver wire, of the size of a common harpsichord wire, passes easily through the nostril, preserves its looped form in the throat, is easily cast round the polypus, and easily twisted, in a gentle degree, so as to kill without cutting it.

FIRST. *How to pass the wire through the nostril to the throat.*—You have already felt the tumor depressing the palate, and estimated its size: you have repeatedly placed the patient before you, and made him open his throat, and depressed his tongue, so as to occasion straining and retching, which unfolds all the parts, and shows you their size and relations: you now place him before you opposite to a light, supported by assistants, resolute to bear whatever you do, and reconciled to it by seeing that you have only a piece of silver wire in your hand. You take the piece of wire, about three feet long, double it, and smooth and arrange the doubled part, by pressing and modelling it in your fingers into a neat noose, a little open and ready to expand when it gets into the throat, but small enough to pass through the nostril; and taking this loop betwixt your fore-finger and thumb, you enter it into the nostril, and push it gently along. However big the polypus, you find that the loop of silver wire glides easily and smoothly along; find it sometimes stopped, and then it bends and resists, but withdraw it a little, and then push it, and it will go on. I have never found occasion to use any instrument for conveying the loop to the throat, except when the bones were destroyed; a case in which I can hardly counsel you to attempt the cure. I have thus imagined, that the wire was turned aside into the antrum Highmorianum, and

have used a catheter, cut or open at the point as a canula, for passing the wire, and then pushed on the wire till it could be seen and caught in the throat.

SECOND. How to hook out the wire from the throat. You cannot be one moment at a loss to know when the wire reaches the throat, for while it passes along the nostril, it excites not even sneezing or watering of the eyes ; but the moment it passes the uvula, or touches either on one side the tonsils, or the back of the pharynx, it excites a sense of suffocation, and a desire to cough, with sneezing, which the patient cannot a moment restrain. Upon looking down into the throat, the loop of the wire is seen : it is easily hooked out by the blunt hook, or caught with common dressing forceps, or a bended probe. Then quickly push the wire onwards through the nostril with the finger and thumb of the left hand, hook it forwards through the mouth with the crooked fore-fingers of the right hand, and as soon as you have got the loop without the lips, all is quiet again ; yet in all cases, the hooking it thus is a painful struggle, though, in the hands of a dexterous surgeon, a momentary one. Often you will find the loop of your wire passing actually down into the glottis ; the patient instantly cries, coughs, and strains violently, while the face becomes turgid, and the eyes stand in tears : instantly, knowing what kind of an accident has happened, you withdraw the wire a little towards the nostril ; by this motion you retract it from within the glottis, and you keep it carefully there till the straining ceases ; then you push it gently on again, keeping the mouth open, and catching the wire the moment it appears behind the tonsils. In this part

of the operation, there is much address and some practice requisite ; first, in stealing the wire on so gently that the patient scarcely feels it ; second, in diving keenly and resolutely with the finger into the fauces, the moment the wire begins to excite the throat, or becomes visible behind the velum ; and, lastly, in quieting and composing the patient for the next part of the operation, viz. that of casting the noose.

THIRD. *Of spreading the loop of the wire, and casting the loop over the polypus.*—You now draw out the loop of wire entirely from the mouth, and spread it wide ; you prepare to re-act with the right hand, in favour of the left ; you take the two ends of the wire which project from the nostril firm in the left hand, twisting it round the fingers for a surer hold ; you gather the fingers of the right hand together with the thumb, so as to form a cone, and taking the loop of the wire upon the conical fingers, you, by drawing the wire up towards the nostrils, tighten the loop so upon the fingers, that it is not easily displaced in the next step of the operation ; you now prepare for that effort, by which you are to carry the loop over the biggest and most pendulous part of the tumor ; and in this effort you are to succeed at once, or to fail ; it can last but for a moment : the patient, while you make this effort, cannot breathe, he feels the severe pressure of your fingers in his throat, he is suffocating, struggling at once for breath, and striving to vomit ; his eyes are staring, and his visage inflated : you dare not keep him one moment in this condition ; you must act resolutely and dexterously. Your purpose is to push the ligature home over the bulk and body

of the tumor with the right hand, while with the left you draw the ligature backwards towards the nose : you first allow the patient time to take breath, and be composed ; you let him fairly understand what you design to do, and how. You prepare yourself by making the wire tense, by pulling with the left hand, and fix the loop by spreading and distending a little the conical fingers of the right : you then, in one moment, retract the ligature steadily but speedily with the left hand, while you plunge the loop into the mouth, and carry it quite to the back of the throat with the right. The tumor, which in your previous examinations you were able only to touch with the points of your fingers, you are now, in the moment of operation, using every degree of violence, and pushing your hand boldly and deeper into the throat, able to grapple with, and by hooking and grappling with the points of your fingers, you get it in some degree within your grasp ; and pulling the



bulk of the tumor towards you, with the crooked points of your fingers, and hitching off the ligature from the points of your fingers by bending them still more, you at once turn it over the lower part of the tumor with the right hand, and pull the noose up towards the root of the tumor with the left.

FOURTH. *How to hitch up the ligature close to the root.*—With every operator this must be a matter of great anxiety, for he has no sign nor mark by which to know, that the loop is carried to the highest possible point, nor any sure means of doing so. Do not let me deceive you, by representing the simple methods I am going to speak of as infallible; so much the reverse, that though they seem to me at once the best and the most simple, though I have always entered upon this part of the operation with confidence, I have never finished without a degree of diffidence and uncertainty.

I have often found, especially in firm and smooth polypi, that I have by that quick and forcible retraction of the ligature, by which I draw it up behind the polypus, hitched it at once so high, that no after operation was either necessary or useful. But the attempt to hitch the ligature high, and place it correctly round the neck of the tumor, can never be superfluous. The instrument I most frequently use is a boy's catheter, or one of the smallest size, cut across about the middle, or somewhat short of the middle of its curve. Taking one of the ends of the wire as it hangs out of the nostril, I pass it through the tube of the catheter, and then holding both ends of the wire or noose firm, I pass the catheter deep into the nostril, along the wire, till I imagine the

point of the catheter touches the tumor ; then, by tightening both ends of the wire, and turning the point of the catheter upwards, I try to raise that side of the wire or ligature as high as possible ; I then withdraw the catheter, pass the opposite side of the wire through it ; I hold all tight again, and try to raise that side of the noose as high as possible ; I then pass both wires through the tube of the catheter at once, push the catheter along till it touches the tumor, pull both ends of the ligature so as to tighten it round the neck or smaller part of the polypus, and, twisting the wire fast round the handle of the catheter, I leave it there. More frequently I use for this latter purpose a shorter tube, or very small section of a catheter, a little bended, which, when fixed, projects no more than an inch, or an inch and a half beyond the nostril, and is less apt to be discomposed by accidents during the day, or change of posture while the patient lies asleep. Sometimes I have run along the line of the ligature, to hitch it higher, a probe with the point bent up. Sometimes, giving the loop a twist in its middle, I have, before introducing it through the nostril into the throat, tied a ligature of waxed thread, or catgut, which is to raise the proper ligature and adjust its place. When a ligature of wire is thus mounted and introduced into the nose, and the loop caught in the throat, and retracted through the mouth, this assistant ligature is fixed on the centre of it ; the noose of wire is then carried into the throat upon the conical fingers of the right hand, and cast over the tumor, and retracted behind it, as I have already explained ; and of the three ends hanging out of the nostril, you raise, first this sup-

plementary ligature, by running the catheter along it, and thus you make sure of hitching the centre of the loop of silver wire higher; after which you carry each of the sides higher, by running the tube along them, and if you know the windings of the passages, and have formed a true conception of the form of the polypus you have to deal with, your chance is tolerable of placing the ligature very true. If there be a second polypus, one in the nostril as well as one in the throat, this method enables you to carry the same ligature at once round both. I have occasionally done this with the common-eyed probe, but the eyed-end of the probe, though from its flatness it glides pretty well along the sides of the tumor, is too big to turn easily, and too sharp in its point; but a surgeon in the country may, by clipping off the point with scissors, and hammering and rounding it upon a stone, fit it for this use. I have occasionally used, for this purpose, a piece of stiffer wire twisted into a loop. In performing this operation, then, I take only a catheter nicely cut and smoothed, a few waxed ligatures and catguts of various dimensions, small and flexible wire, for forming the noose, and thicker and firmer brass wire to use for this purpose, with cutting pliers, and common pincers, to turn and twist the wires into whatever shapes best suit the occasion; or the accidents of the case.

FIFTHLY. *Of the effects of the ligature on the tumor, and of the time of its separation.*—When you first draw the noose, the stricture is followed with extreme pain, the eyes fill with water, the patient cries out and retracts his head, and violent sneezing follows; during the whole of the first and second day, the pain is like

that of severe tooth-ache, and, upon tapping with the finger upon the catheter or probe, you find it firm. On the third day, a thin and bloody serum begins to distil from the nose, and continues to flow in great profusion, the probe or catheter is blackened by the putrid taint of this serum, the polypus, if any part of it project so as to be felt, is perceived to be flaccid, the breath begins to pass through the nostril, and the patient, who had felt his fauces choked with the polypus, and was deaf from its pressure, now swallows easily, and hears very acutely, because the tumor begins to shrink.

These are the first auspicious signs of the fading of the polypus. The fœtor of the matter increases on the fourth and fifth days ; the probes and silver wire are still more blackened ; the wire manifestly has become looser from the shrinking of the tumor, the catheter now shakes from side to side, and, that it may completely destroy the polypus, you find it necessary to draw it a little closer in proportion as the tumor has already yielded. Not unfrequently it happens, that at this time the probe or catheter comes easily away, and the loop of the ligature continues to retain its hold for a day, or at the utmost two days longer ; and though the pain is not renewed, the polypus being now less sensible, the parts are still more blackened, the discharge is extremely fœtid, thin, and copious ; some blood usually flows at this time, the swallowing improves, and the hearing grows too acute, irregular, and confused ; the tube falls away on the sixth, seventh, or eighth day, and often it happens, that the tumor melts away so entirely, and is resolved into this gangrenous ichor, that no

perceptible portion of it falls away : sometimes, continuing more entire, it drops into the throat, and the patient rejects it ; often when it drops into the œsophagus it is swallowed, and is passed indigested by stool ; sometimes the patient is conscious of having swallowed the tumor, but more usually it passes over the throat insensibly, and during sleep. I have known it happen, especially in the hands of ignorant people, that after the polypus has dropped off, and actually been passed by stool, the tube and wire have kept their place, without the reason being at all suspected : it is this, that the loop of the ligature being larger than that narrow slit of the nostril through which it should pass, it hangs suspended, and I have known it hang so a month, but loose, moveable, and easily taken away. I do not know that the loop of wire ever needs be left, even in the most bulky and cartilaginous polypus, beyond the eighth day.—Allow me to detain you a moment to confirm this fact by an anecdote in surgery. I had pretty publicly affirmed, in lecture and in conversation, that this was at once an effectual and easy way of noosing a polypus, and that no man of common dexterity could fail to perform it. A gentleman who had as publicly tried, in a well-grown lad, to noose a polypus after this manner, challenged me to make good my word by applying the noose ; this I was charitable enough to do, not in the public operation-room, but in a side-room, pushing the ligature boldly with the fingers of the right hand, and retracting it into the back of the nostril ; at the same moment, with the left, fixed it round the tumor at once, and tightened it by running the wires through the tube. Having done this part

of my duty, and proved by the firmness of the tube that the tumor was well and effectually noosed, I never imagined it necessary to instruct an hospital-surgeon how or when to remove the wire ; he had tugged in vain at it the first three days, and then formed the sage resolution of leaving it to drop away of its own accord. Little did I imagine I was ever to see the lad again, when one day about two months after, in walking idly the rounds of the hospital, I saw this lad with his face wrapped up, and the tube projecting from his nose, through a quantity of foul dressings. I could not but inquire how his polypus had returned so suddenly, and who had introduced the wire a second time, when, to my surprise, I learnt that the wire I had applied, had neither been removed nor dropped away ; upon removing the foul and foetid plasters and dressings which were bound round his face, I found that the wires had been drawn so tight against the wing of the nose, and bound so firm by adhesive plasters, that the ala nasi was slit up its whole length, fairly as ever a sow's was by the ring ; this long cut was healed, the wire held by this slit alone, for the tube was loose, and the polypus gone.

The operation of noosing a polypus is not suited, in any degree, to these small and soft polypi which occupy only the nose, but to those big and solid ones which depress the palate, and are felt in the throat. It is most natural for the young surgeon to believe a polypus the more formidable the greater its size, but indeed it is impossible to grapple with those which are not large ; those are most easily grappled with

the points of the fingers, and noosed with the loop or ligature, which are very conspicuously large.

EXAMPLES.

“ The case of A. Gow is one, I believe, particularly suited to convey clear impressions of this second stage of the disease, in which the tumor is bulky, fit for the application of the noose, and not yet accompanied with any caries of the bones. Gow is a hard-working young man, of twenty-one years of age, apprentice to a mill-wright in Blair Athol; his polypus is big, and of a stony hardness; it chokes the fauces, as if a fist with its knuckles downwards were thrust into the throat; the chief bulk of the tumor descending from the back of the nostrils, pushes out the soft palate into a great convexity, so that it presses the root of the tongue; two large knuckle-like tubercles of the polypus project below the curtain or moveable palate, and on the centre of the convexity formed by the protruded soft palate are two long gashes of incision, made apparently with the expectation of letting out matter by his country surgeon, and now in suppuration. There is no part of the polypus projecting from the nostril, the bulk of the tumor is in the fauces, yet the face is deformed, the nose being inclined to one side, as if a branch of the polypus were lodged there. There have been frequent and very profuse hæmorrhagies; the parts within the nose are greatly endangered by the pressure, which is attended with considerable pain; but, as yet, no matter distils from the nostrils or throat, there have

been no intense pains in the cheek, the maxillary and nasal bones seem firm and sound, the disease is advanced to the farthest verge of the second stage, and beginning of the third, in which the bones and Schneiderian membrane fall into incurable ulceration. Nothing has saved the patient from such caries, but that the tumor, though very bulky, is but of recent growth; it is of such a size as to be extremely favourable for operation: before applying the noose, I take the following notes of its progress.

“ The lower order of people are coarse and hardy, very little attentive to their health; it is not a slight alteration of the voice, slight obstruction of the nose, or occasional hæmorrhagies, that can alarm them; thence it happens, that the date they assign for such a tumor, is not the beginning of its growth, but that stage of its progress in which it occasions particular distress. It is no more than six months since Gow suspected any thing to be wrong in his throat or nostril; he had toothache, and had a tooth pulled, without any possible relation to his present ailment, the first sensible sign of which was hæmorrhagy from the nose. During eight or ten days, he seldom rose in the morning without violent hæmorrhagy, which sometimes recurred during the day, or in the evening, but it ceased spontaneously.

“ About a month after this first attack, the occasional hæmorrhagy returned in all its violence; he bled profusely from the nose, not only in the morning, but at all hours of the day and night; all the usual methods of restraining it now failed; he fell into extreme weakness; and, to use his own homely

expression, ‘seemed to have bled out all the blood of his body.’

“ One day, when he was out in the duke’s woods with his master, the mill-wright, cutting wood for their work, he observed, in blowing his nose, that he could not blow with his right nostril ; he felt, at the same time, something uneasy in his throat, and, directed by this feeling, pushed his finger as far back as it could go, and then he plainly felt a soft lump, obstructing his throat, and hindering his free breathing ; and being greatly alarmed, he begged his master to look into his throat, who saw the lump very plainly.

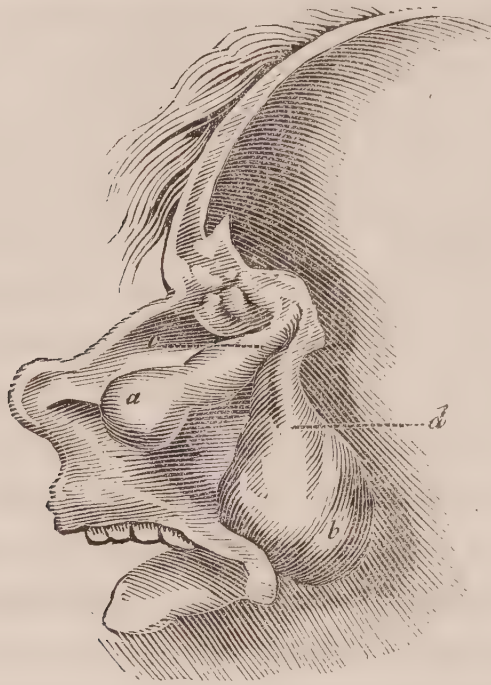
“ The tumor increased rapidly : it was the difficulty of breathing, and uneasy feeling in the throat, that first led him to the discovery ; and being sensible that the lump in his throat was still growing, and feeling his right nostril particularly stuffed, he introduced his finger there, from time to time, and was sensible, also, of a smaller lump obstructing his nose.

“ At this period when he had difficulty of breathing, with a total obstruction of the right nostril, difficulty of swallowing, with a degree of deafness in the right ear, he had no distinct toothache, but a general uneasiness, sense of pressure, and confused pain in the head : but he had no returns of the hæmorrhage, and only a thick, white, and starchy-like mucus, a mere increase of the natural secretion distilled from the nose.

“ In this stage of the disease it was that he first applied to a surgeon, a very ignorant one, who performed a singular operation ; the incisions which he

made are still in a state of suppuration. The lad went to this surgeon to complain of difficulty of breathing, and a lump growing in the throat, which he could easily see and feel. The surgeon having heard of swellings of the tonsils, and obstructions of the throat, and read, perhaps, of the operation of scarifying the tonsils, to let out the matter, knowing nothing of diseases, and apprehending that the tumor he saw could be nothing but the swelled tonsils, he proceeded to make two long and deep incisions. This bulky and firm polypus, having pushed down the velum, had depressed it to a right angle with the palate ; and the soft velum, with its uvula, was thus protruded forwards in the mouth, in the form of a tumor, so far, that you could easily touch it with the finger. He perhaps imagined it some great abscess of the tonsil : he made, with what instrument I know not, two long incisions, each more than an inch long, parallel with each other, down through the very centre of the velum ; and the same pressure which thus extended the velum continuing and increasing, has so dilated the two incisions, as to prevent them healing : they are to this day in a state of suppuration, with red and hardened edges, though it is full two months since they were made.

“ The surgeon said he would come back and complete this operation ; what he designed next to do it is difficult to conjecture ; but, fortunately for Alexander Gow, the operator, while meditating upon the operation, died—probably from solacing himself, after hard rides, with too strong a cup ; and, soon after his death, Gow came to town to have some operation performed.”



The plan is that of a polypus, which is just within the limits which I would prescribe, as admitting the operation of the noose : A. B. a fine healthy boy of about fourteen years of age, tall for his time of life, and with a fine ingenuous countenance, presented himself with a polypus visible in the nose, and just tangible in the throat behind the palate : it was of a size and condition very propitious to the operation ; not yet accompanied with pain, nor hæmorrhagy, nor foetor of the breath, nor matter indicating caries of the bones ; and yet so firm in its consistence as to bear the ligature ; and so large as to come within the grasp. His voice is completely changed, his breathing quite obstructed, his hearing much affected, but the face is so very slightly distorted, that you can hardly say which side of the nose is bigger, the chief bulk of the polypus going backwards into the fauces : every thing, in short, is so favourable to operation, that I am at little pains to inquire where it began,

or what he suffers ; indeed what is suffered by a boy of this unreflecting age, unless there be actual pain, is very slight.

The plan which I have sketched of this tumor expresses whatever I could wish you to remember : the tumor was like all those which descend into the fauces, not only firm, but of a cartilaginous hardness, and knuckley form. The anterior polypus projecting from the nostril is just visible, is very firm, is like the point of a finger in respect of size and form, and is little moveable. The body or chief bulk of the tumor passes backwards into the fauces, does not depress the velum, or very slightly, does not at all times appear below the edge of the soft palate, it becomes visible only in the moment of depressing the back of the tongue strongly, for then the gorge rises, the patient strains to vomit, the soft palate is constricted and retracted, and the lower or bulbous part of the polypus appears ; but it is distinctly felt by pushing the fingers into the throat, and when we grapple it, it feels of a stony hardness and quite unyielding.

I applied the ligature with the usual painful struggle, but the boy bore it well : the tube for tightening the ligature stood very firm : he was, on the fourth day, relieved of the tube and ligature, which dropt away ; and at the same time, of his deafness and stupor, recovering with all his natural voice. But, though I have noosed many polypi successfully, in this I certainly failed ; I imagined I had noosed both polypi effectually, for both dropt away, and he was conscious one night of swallowing that one which choked the fauces ; but either the polypus project-

ing forwards into the nostril had in part escaped, or, from the ligature embracing both, they had been imperfectly compressed; or there had lurked behind them a third polypus, which indeed I conceive to be the most likely conjecture; but the disease actually returned: in a few months he came back to me with the voice as much affected, and the guttural part of the polypus as bulky, as at first. Though mortified, I was not discouraged by my ill success, but addressed myself again to the business, and noosed this new tumor, taking every precaution to carry the ligature quite up to the root, and I am confident this boy was, by this second operation, perfectly cured; I saw him grow a fine stout young man, and I must have been his sole resource had the disease returned a third time, for the operation was bloodless, not at all alarming, and little painful, and his relief perfect. You will observe, that I have extracted this plan as it is sketched in my case-book, with one root to both tumors, representing them as connected by one common stalk, or pedicle: I have since changed my opinion on this subject, and am persuaded that, wherever there are two or more polypi, they are distinct in their roots, as in their bodies. This was just Gow's polypus in embryo, and I speak of it to you as an example of two polypi; and a warning of the unlooked-for disappointments you will have to brook, if you are engaged in this line of practice.

OF THE THIRD AND LAST STAGE OF POLYPUS.

The last and fatal stage of this disorder you will know, even at sight, by strong characteristic marks:

by the humid half-closed eye, moving slowly and half drowned in water; by the snuffling voice, the total deafness, the stupor and languor, approaching to apoplectic, the distorted nose, and pallid transparent wax-like face: while the loose nasal bones, and puffy cheek, denote the incurable stage of the disease; the puffy integuments and softened bones, and foetid matter running from the nose, prove that all you have it in your power to do by operation is to save the patient, for a little while, from dying of hæmorrhagy.

“When first I visited Mr. Cameron, his whole form and countenance and state of suffering struck me: he was a fine young man, about twenty-five years of age, tall, athletic, and had been noted for his strength in all kinds of exercise and feats of strength. His form was emaciated, his face deadly pale, with a ghastly transparency of skin, which gave his countenance the appearance of modelled wax: this proceeded from the frequent loss of blood. There was a remarkable torpor and heaviness in the eyes, which were half closed; for hæmorrhagy brings on a languor and sleepiness which, in a case like this, is increased by an actual disorder of the brain. His nose was inclined much to one side, and his face greatly deformed; not merely by the rising of the cheek-bone, and the dilatation of the nostril, but from the swelling of the whole of the right side of the head, which seemed universally enlarged. The right eye was turned obliquely in its socket, and almost closed; a large and massive branch of polypus projected from the right nostril; and looking into the throat, I saw the soft palate pressed forwards by a second polypus,

as big as the fist : from continual pain of the caries, the tears streamed unceasingly down his cheek, so that he saw confusedly ; the saliva flowed continually from his mouth, and involuntarily, while a foul, black, and corroding sanies, distilled from the nostril, and excoriated and swelled the upper lip. He said his head was continually tortured, as if squeezed from temple to temple in an iron vice. He sat pale as a spectre, hanging over the fire, though in the hottest season of the year, his knees almost touching the grate, resting his head upon his hand, and waving it to and fro with continual agony, moaning and complaining. His visage was pale, his lips bloodless, and every thing about him denoted despair, and the most perfect indifference about life. He was so deaf as to be insensible to the loudest noise : you could scarcely make him understand you, even when you hollowed in his ear ; he was unconscious when any one entered the room, or shut the door ; his teeth were loose on the affected side, and some had dropped from their sockets ; he was able to swallow liquids only, and, partly from this cause, but rather from despair, he refused all sustenance, drank only water to slake his thirst, and to every kind or encouraging expression he always replied, ‘ He knew he could not be cured, he wished he could die.’

“ We cannot say whether ever in its earlier stage such a disease could be cured ; and it would be ungenerous to blame any professional men who were not inhuman as well as unskilful : but I really believe that this young man was lost from the cool and cruel policy of one who made a trade of surgery. His ailments began about two years before that period in

which he called my assistance ; he came to town with a polypus occupying the fauces, affecting very greatly both the breathing and swallowing, and so large as to be distinctly felt in the throat, and put himself under the care of this gentleman, who felt that indecision and aversion from engaging in the case, which every surgeon must feel who regards his own reputation as in danger of being involved in his patient's fate : he talked of operations, but proposed none ; spoke of various methods, but as doubtful and of very difficult choice ; by beginning with this cruel and unprincipled policy, he, perhaps, imagined the patient's fate might be otherwise decided, but certainly if he knew his profession at all, he could neither hope nor believe that any favourable change was possible ; he was yet ready to adopt every seeming change as an apology for his want of faith, and neglect of duty. Cameron, encouraged by flattering professions, and bold promises, lived at large ; and, one day dining at Leith with some young friends, he, in the midst of their jollity, suddenly felt himself almost suffocated : a part of the polypus had given way, fallen into the fauces, stuck there, and was ejected after violent struggles, and no small danger. Having thrown up this knob of the tumor, he preserved it in his handkerchief, and returned instantly to town.

“ His surgeon told him how fortunate he had been, that this was the chief part of the polypus, that this accident showed a great disposition on the part of nature to cure the disease, such as needed only to be assisted : he gave him now some parcels of thick bougies to pass along the nostrils, assuring him that

this alone was required to preserve the passages open, and destroy the remains of the tumor, and sent him homewards, a journey of two hundred miles, rejoicing, no doubt, to have so desperate a case disposed of so profitably, and (in respect to his own reputation) so quietly, and so irreproachably.

“ He travelled homewards very feeble, reduced by frequent hæmorrhages, which often stopped him on his journey, and even before he arrived at home, the polypus was again felt sensibly in his throat : all his miseries returned, deafness, stupor, head-aches, difficulty of breathing and swallowing, and hæmorrhages so excessive, that from month to month, he was reduced to such extremity of weakness that he could hardly move ; with this only consolation, that he was among kind relations. He was not aware, that there were precedents in every book, and in daily practice, for acting upon this vile maxim, “ Never meddle with these diseases, or that stage of disease which seems desperate, and where you have but a slender chance of deriving credit from your interference.” What is this stain upon the reputation that is so much dreaded ? Surely in every desperate disease the patient requires much care, and sympathy ; and to retire under shelter of this cool and selfish maxim, seems to me no better morality than, if one were to refuse to put forth a hand to a drowning creature for fear of wetting the sleeve, not for fear of endangering one’s own life.

“ At the distance exactly of a year from the commencement of ‘ nature’s operations,’ this poor man requested my assistance in circumstances altogether desperate, when little could be done, even to prolong

life, where to save nothing but a miracle could avail. I was induced by his earnest and imploring manner to do whatever was in my power, and, encouraged by this reflection, that, in such desperate circumstances, every partial success, though it seems simply to prolong life, is followed by an interval of tranquillity and hope; and by this rule and feeling I shall always be guided, doing as I would be done by, persevering always even after all hope is over, if conscious that I am doing no direct injury. I have told you how he was exhausted by suffering, how distracted with pain, how overcome with stupor, except in the moment of violent suffering; and when I tell you that, upon the slightest intimation, that the prospect of saving him was very small by any operation, he refused food, I represent in one word his despair. The hæmorrhagy was particularly terrifying; and he obtained a promise of me, that, upon the first return of it, I should introduce the plugs to arrest it: from this moment I was entirely embarked in a desperate cause; when the hæmorrhagy returned, which it did with violence, and at midnight, I passed a ligature and drew up plugs from the throat to the back of the nostril, and thus prevented him actually expiring, for he was now too far exhausted to bear loss of blood.

“I now called a full consultation, and was not merely permitted but advised, at his request, to try every method: I proceeded by passing a wire through the nostril, and drawing it from the throat into the mouth, to noose the main tumor, which was bulky, depressed the palate to right angles, was very visible in the throat, and felt, while I grappled with it, as

bulky as the fist. The tube which I used for tightening this noose, stood out from his nostril very stiff, having a very firm hold: I had also been careful to include a polypus which hung down in the nostril, and thence expected after the operation of the ligature, that the passages should be tolerably clear. The tube continued rigid and very firm for five days; he had in the very moment of tightening the wire, and for several days, a poignant excruciating pain, in all that side of the head, but especially in the teeth and ear; the matter flowed, blacker, and more foetid, discolouring the wire and the tube. On the fourth day the wire slackened, and the tube could be moved a little from side to side, I therefore drew the wire tighter: on the fifth he was suddenly restored to his hearing, he was sensible of swallowing the tumor, the wire dropped off, his pains vanished, he swallowed easily, and he was so elated with hope and confidence, that he ate heartily, drank his wine, took exercise abroad, and felt assured of what no prudent man could promise, an absolute cure.

“ This was the period, in which having made way into the nostrils so as to operate freely, I should have searched boldly with my finger, introduced my knives, forceps, and caustics, and resolutely extirpated the branches, and roots of the polypi. If I was guilty of any dereliction of duty, it was from no selfish nor trivial motive; this was a case so desperate in all respects, with a stupor so manifestly implying an affection of the brain, that I was afraid of causing inflammation and sudden death: if at my next operation I was more resolute, it was from despair, joined to the earnest intreaties of the patient. In less than

a fortnight I felt the tumor from the nose rising again ; at this time, restored to strength, and spirits, and the nostril open, he could blow through it so freely, as to dash out the foul matter and blood with great force, and my fingers could pass deep into it. There was no sensible tumor in the throat, but in a little while the nostril was much obstructed ; in a little longer, the tumor could be felt also in the throat ; the hæmorrhagies returned, so that he was in danger of sudden death. His entreaties were renewed, and Dr. Monro, Messrs. Wood and Harkness, and the other gentlemen, met again in consultation, added to the patient's wish of having these attempts renewed, and were assembled again the day following, to assist in the operation : but I could not noose the polypus as at first, not because of its lesser size, but because when I grappled with the tumor in the throat, it recoiled into the nostril ; when I resisted this by plunging a finger deep into the dilated nostril, and met and resisted the tumor there, it seemed to recede into the antrum Highmorianum, and when I pursued the now moveable tumor, with the finger among the cells, I found, to my inexpressible horror, that every bone and bony cavity was entirely carious : the partition which divides the antrum from the cavity of the nose was quite destroyed : the polypus occupied the cavity of the antrum : the edge of the vomer rough, carious, and disengaged from its cartilage, met the finger, and the nasal branch of the upper maxillary bone was rotten : the polypi felt soft and mucous, and the whole seemed to be one mass of corruption.

“ Since our operation was begun, though it could,

in these circumstances, be nothing but unavailing, still the patient's intreaties, together with our natural desire to give him every chance of life, prevailed. To prepare for this severe operation I passed a ligature by the nostril to the mouth, fixed a plug of lint to it, kept it ready to be drawn up into the back nostril, in case of hæmorrhagy, which our patient could ill bear, introduced then the forceps, and caught at whatever branches of polypus were within my reach; turned the instruments in every direction, and cleared the nostril by every means, however rude, and indeed so cleared it that he could blow freely, and dash out a slush of blood, mixed with fragments of mangled polypus, to a great distance, and without permitting him to lose even one ounce of blood, which indeed he could not have endured; I drew up the plug, and made all close. In three days the plugs were removed*, the nostril was in full suppuration, and the passages seemingly clear.

“But the same, or another polypus, soon appeared, small in the nostril, more considerable in the throat: the deafness, the pains, the loss of voice, and the difficulty of breathing soon returned; and the patient, who, during a short respite, in which he had eat, and drank cheerfully, and recruited his strength, fell again into a state of despair; and above all, this fear was

* In removing the plug, you first undo the knot that secures the anterior plug in the nostril; you then slacken the string, that the posterior plug may fall down towards the throat; if it do not fall down spontaneously, you push against it by passing a probe through the nostril, holding the string at the same time, that the plug may not go quite into the fauces; you put in your dressing forceps, catch it at the back of the palate, pull it forwards from behind the velum, and having brought it out of the mouth, you cut the string in the nostril: you thus extract it.

most distracting to him, that we should sooner or later abandon him to his fate. The polypus had now attained such a size, that it was again possible to noose it; and the hæmorrhages were such, that he felt distinctly that if nothing was done for him, he had not many days to live. The ligature was again passed, and the noose cast over the tumor, and in four or five days, when its operation was complete, the nostril was so clean, and at the same time so dilated, that I passed the finger, and turned it in every direction with ease, almost to the throat. But I may say, my finger was hardly out of the nostril, ere the tumor began again to protrude; and on the twelfth or fourteenth day he had a dreadful hæmorrhagy.

“There was now no alternative but death, or the most resolute operations: I had not then learned to use the caustic so freely as I now do, and considered the partial application of the caustic as disproportioned to the size and rapid growth of these polypi. I resolved to burn, with the actual cautery, whatever remained of these polypi; and to give access freely to their roots, I noosed the polypus, the polypus which presented, and cleared the nostril a third time, and had a large cautery, with a proper canula, forged for the occasion. But it was now the height of summer; the weather towards the end of July intensely hot; the foul and pestilent ichor which excoriated the lips outwardly, passed in such quantities into the throat, that he was seized with diarrhoea; shiverings, and fever ensued: then a state of stupor and extreme coldness succeeded; in five days he became quite insensible, and after lying three

days more in a state of complete stupor, accompanied with slight delirium, he expired."

From this narrative you will learn how much more terrible this disease is than lues or cancer ; for, with all that is loathsome or painful in those diseases, it is attended with hæmorrhagies, stupor, a confusion of head, and affection of the brain, which I have always observed, is, more than hectic or hæmorrhagy, the immediate cause of death. If from the drawings of this patient's disease, it should appear, that I have not done all that was possible ; that the tumor still remaining, and represented in the drawing of polypus, No. 5, at (u), was of such a size as to admit the application of the ligature, and that the various smooth polypi seen in No. 4, hanging down (a b c), into the cavity of the antrum, might have been seized with forceps, and their roots killed with caustic or the cautery ; let it be remembered in extenuation, that it is the very use of pathological anatomy, to show us after death, what it would have been profitable to know during life ; and to make our slightest errors manifest. Let it be remembered how small, stringy, and moveable, so as to escape the grasp, these lesser branches are, compared with those of bigger size, which I did extirpate. And let it be remembered, that every thing I did to save this man, was at the peril of my reputation, and after, by long neglect, the disease had almost run its fatal course : at each new attempt, I was in danger of exciting that inflammation of the brain, which, at once, would have cut him off : and visibly and directly (for so it would have been inferred) by my rashness.

Since I have represented almost every other form

and stage of the disease, let me represent this also, of delirium and inflamed brain, brought on by a rash and ill-timed working with forceps.

I have often found the polypus advanced to its last stage of caries, and external abscess, even in the sixth month after it was first observed, if not actually in the sixth month of its growth, and fatal within the year. So it was in the woman, whose death I am now going to describe ; in her case, indeed, it would have been so, although no such rude operation, as that I am now going to speak of, had been performed.

“G. T., a woman of forty-five years of age, was afflicted with polypus, which had long obstructed her breathing: for half a year or more, the right nostril had been impervious ; during the three succeeding months she had been deaf, and torpid ; the tears flowed continually over her cheek, and the tooth-ache and rending pains of the face and head, became at times distracting. The right nostril was filled manifestly, with a soft and mucous polypus, the eye watery and inflamed ; the cheek suppurated and burst, near the canthus of the eye ; the whole side of the head was pained, the cheek and jaws swelled, soft, inelastic, and doughy ; a purulent and thick matter flowed from the suppurated parts, at the inner canthus of the eye ; while a thin and foetid matter distilled from the nostril, and excoriated the lip. Her general headache was aggravated by a more pungent, and tooth-achy pain in the nose and jaw : yet she seemed hale, and vigorous ; and there appeared no reason to fear such a sudden or dreadful catastrophe from any operation, however rude ; let this case then be a warning to you.

“A consultation decided that an operation was advisable, and it was performed by the forceps. To my apprehension, no polypus was extracted; little rags, of a soft and mucous matter, seemed to be squeezed by the forceps into a mere jelly; the forceps were used for twenty minutes, with no great delicacy; a small piece of bone was found among these rags of the polypus; there was not even any remarkable hæmorrhagy: when invited by one of the attendants to look into the largest portion of the polypus, I found it no other than a roll of lint soaked with blood. She was reported to breathe more easily through the nostrils, but for that slight and momentary relief she paid a dear forfeit.

“On the day following the operation, her pulse rose; there were manifest signs of an increasing pain; the pain shot through all her head; she was hot, and thirsty, with a small and rapid pulse; her anodyne draught produced no pleasant nor refreshing sleep.

“On the second day, the nostril, the face, and eyes, were extremely pained, and the shooting pains and confusion of head increased; but all this inflammation was internal, (not the less dangerous for being so), the eye and cheek were little apparently affected.

“On the third day, the heat, thirst, rapid pulse, and general disorder within the head, were alarmingly increased. The saline draughts, the shaving of the head, and the poultice in which the whole face was involved, availed nothing.

“On the fourth day, at nine in the morning, she was found insensible, and remained so; the pupils of the eyes dilated, the breathing slow, and stertorous, and the bladder paralytic, so that the urine needed to be drawn off with the catheter.

“On the fifth day, she lay in a deep apoplectic stupor, had no stool, passed no urine, was visibly sinking; a blister applied to the head had its effect; the sinapisms also inflamed the soles of the feet, but she could not swallow.

“On the sixth day she continued comatose, sank gradually during the night, and expired before morning: and upon dissecting the head, the polypus was found a mere pulp of putrid flesh: the æthmoid bone destroyed on the right side, and the vessels of the brain were found turgid with blood; its upper surfaces suffused with water, and its lower surface in a state of suppuration. Here are the terms in which the appearances, on dissection, were noted down.

“DISSECTION.

“Upon removing the skullcap, the sinuses and arteries of the dura mater seemed to be unusually turgid with blood: when the dura mater was cut and turned aside, those of the brain were found to be extremely turgid with blood: over the right hemisphere of the brain, there was an effusion of coagulable lymph; on the left side, the effusion was merely of serum; the ventricles were much distended with water: the same effusions of serum and coagulable lymph were found upon the lower surface also of the brain, and there the dura mater was manifestly inflamed. The cribriform plate of the æthmoid bone was gone, being entirely destroyed by caries. The bones of the right side of the nose seemed all loose and carious; but all below the æthmoid bone within the nose was an indistinct mass of putrid and mucous flesh and bone.”

Having thus set before you many lessons, and some examples, and proved what I have described by true drawings, and illustrated the operations I recommend to you by plans; I leave you to your own discretion, sense, and judgment: reminding you only that this, like every tumor, should be resisted at an early period of its growth; that these are not maladies to be cured by gentle and trivial practices.

DISCOURSE VI.

ON TUMORS OF THE GUMS, LIPS, CHEEKS, AND THROAT.

THIS is, in every sense, an arduous subject; especially if it was my design, to reconcile every appearance of disease in those parts, with their complicated and curious structure: parts in perpetual motion, parts performing a variety of functions, as chewing, swallowing, speaking, breathing: parts provided with various glands, salivary, and lymphatic, and secreting even from their surfaces, fluids of various properties. Surely such complicated structure must be a source of various disorders; for always in the animal body, as in less perfect machines of human invention, no part is so formed as to serve various purposes, and to perform many functions perfectly. Reasoning from the complicated and intricate functions and structure of these parts, you would find cause to believe, that their diseases must be very anomalous; observing, on the other hand, the strange tumors, obstructions, and unnatural communications of one part with an-

other, you would be inclined, as every one unacquainted with our science is accustomed indeed to infer, that the complex structure of the parts about the throat and jaws, were the source of much danger and misery.

When we can distinctly perceive, that it is from something peculiar in the structure of a part that diseases are frequent and complicated, precedents are very precious ; for we are irresistibly inclined to reason on the cause of such organic disease ; and it is only under the correction of plain facts and dissections, that we can reason safely.

I must acknowledge, while I can no way explain the fact, that the gums, lips, and inner surface of the cheeks, parts seemingly insensible and indolent, give rise to tumors which are indeed slow, firm, indolent, and void of pain in their early stages, but in their latter stages of unparalleled malignity assuming usually a fungous form ; and, when the firm and indolent tumor thus bursts out into a fungous efflorescence, its growth is so rapid, that I know nothing to equal it, not even the fungus of the brain ! it rises *à vue d'œil*, you almost see it grow, and, when extirpated partially, it sprouts up again before the blood of such imprudent incisions is dried up. The tumors of the gums are spongy, luxuriant, hæmorrhagic, and truly cancerous : those lodged within the substance of the cheek, knotty, indolent, slow, malignant, and, however long they are of showing their malignant nature, they terminate, if neglected (and much it is to be lamented, that, from the patient's fears, and the surgeon's timidity, they often are so), in the most incurable and desperate maladies.

The gums are subject to such an infinite variety.

of slighter swellings, to boils, to little indolent tumors resembling the hordeoli, or tumors of the eye-lid, and to harmless indurations, that those which are the germs of the most horrible diseases are too little suspicious, too slightly characterised by any peculiarity of form or aspect, to attract attention till too late. A small, firm, seed-like tumor is perceived, but hardly noticed, for months; it is seated between two of the fore teeth, begins to separate, displace, and loosen them; it grows imperceptibly and slowly: the teeth are raised from their sockets; they become loose and vacillating; they have no longer any hold of the jaw, but are merely hanging in the tumor; the tumor retains its original gristly hardness at its basis, becomes rugged and irregular in its upper part, with a cock's-comb-like edge: though little painful, it bleeds from time to time; it extends itself to the gums of other teeth, which are successively displaced from their sockets and loosened, and one side of the mouth is occupied with it. Next the hard basis of the tumor extends into the cheek; the tongue begins to be pushed aside, horrible fœtor of the mouth ensues, with frequent hæmorrhagies; the tumor now protrudes and keeps the mouth open; the disease becomes now terrible and painful, the patient survives for a few weeks, with the mouth and lower part of the face wrapped up in handkerchiefs, in a miserable and loathsome condition; the putrid and blackened blood distilling with the acrid saliva through the filthy clothes, till, wasted by suffering, he dies in inexpressible pain. Such is the kind of death, from which, I sincerely believe, I have saved many by a slight incision.

“A young gentleman, Mr. H——, about twenty-

five years of age, of an athletic form and healthy constitution, and without the slightest taint of disease hereditary or acquired, had, from no perceptible cause, a tumor firm, cartilaginous, and elastic, seated so fairly in the centre of the gums, as to raise the two centre teeth of the lower jaw from their sockets far above the general range of the teeth, and separate the two that lay adjacent. Gradually, but yet in a short period, in a little more than three months, it had separated those two central teeth, projected from betwixt them, and increased to a very remarkable size; and, though it had begun from the inside gum, the greater portion seemed to be before the gum, just over the chin, projecting the nether lip.

“ This tumor was about the size of a walnut, irregularly globular, knobby, and shining; when moved by pressing it with the thumbs, backwards and forwards, it seemed firm, fixed, and actually a tumor of the jaw-bone; yet I knew it, by its smooth knobular form and its elasticity, to be a tumor of the gum. It felt, when pressed between the finger and thumb, so elastic, that a tyro must have believed it to contain a fluid, while I knew it to be in truth a solid tumor, neither suppurated, nor capable of suppuration. Its general aspect was that of a tumor so indolent, that nothing need be dreaded from it, and so much had it the form of one that might contain matter, that some surgeons might have been induced to strike the lancet into it; but I was well aware, that not a drop of matter would follow any puncture made into it, that the tumor inflaming, would turn out its edges, spread into a fungus, and,

in a few months, cause a horrible and melancholy death.

“Dr. Munro, Mr. Allan, and myself, having consulted on the nature of this tumor; judging by the analogy of former cases, declared it to be of a most dangerous nature: it had already displaced the teeth, probably injured the alveolar process of the jaw-bone, attained to an alarming size, and threatened, in no long period of time, to assume the most malignant possible form. We explained to our patient that it contained no matter, was incapable of suppuration, was of a size that forbade all hopes of resolution, was sure to become cancerous, admitted of no delay; and we explained, that we dared not, even in its first and least alarming stage, do less than extirpate it from the very root: we represented, the operation was harsh but not tedious, void of danger, even of hæmorrhagy; that nothing was to be feared but the not cutting it completely out.

“In preparing for such an operation, it is right to have ready the apparatus of a dentist, especially forceps to twist out the teeth, strong pincers to cut the solid gums, engravers’ knives to cut away whatever is corrupted of the jaw-bone, and pieces of dry and solid sponge, to thumb down into the void left by extirpating the tumor, in order to prevent hæmorrhagy; and two things the surgeon must be prepared to encounter, great difficulty in cutting the tumor, and such confusion from the mouth filling, like a cup, with blood, that, after the first stroke, he can see nothing of what he does, but must proceed by feeling. The surgeon has much reason to fear that,

in an operation where his view of the incisions is so obscured, he will be guilty of much unseemly mangling and tearing ; yet the pain of such an operation, however rudely performed, is nothing to be compared with that of pulling out a rotten stump, and the motives infinitely more persuasive than a tooth-achy pain.

“In performing this operation, I held the jaw-bone firm with the fingers and thumb of my left hand, while my assistant inverted the lower lip, and, with a scalpel of special strength, broad-backed like a cartilage knife, I made the incisions downwards on each side in such a form as to resemble the letter V, or the Greek delta. The knife was carried by the side of each of the displaced teeth ; all my strength of hand was requisite to carry the knife down to the angle ; blood instantly filled the mouth, so that, after the first stroke of the knife, every thing was done by feeling ; but I cut with such decision, with such level lines, and made them so fairly meet each other in the angle, that, by pressing my two thumbs, one within side of the tumor, the other without, and pushing alternately with my thumbs, and poising with the flat handle of the scalpel, I pushed the tumor out, clean and unmangled, leaving a very wide opening bounded by the fangs of the adjacent teeth ; and, after allowing the part to bleed till it stopped, I laid a piece of sponge in the deep triangular cleft made by the operation, and closing the upper range of teeth upon the sponge, their pressure kept it in its place. This sponge was removed the second day ; simple dressings of dry lint rolled in the shape of a pellet were substituted for the sponge ; during eight

or ten days our patient ate cautiously, and, in little more than ten days, the incision was completely healed.

“ I was greatly interested in knowing the internal state of the tumor in this stage ; for I regarded this small tumor as the germ of that terrible disease, which I knew so well by experience, for which I had operated sometimes successfully, sometimes at so late a period as only to witness, perhaps to accelerate, its fatal catastrophe. The tumor had a cartilaginous coat, being the substance of the gums degenerated. In the central parts were small cavities, and, when they were cut vertically, a gelatinous substance oozed out. The internal surfaces were studded with small grains like millet-seed : the thickness and cartilaginous texture of the coat of this tumor formed by the gums, shows that the matter would have been long in making its way through them ; its gelatinous nature proves that the cavity would not have closed ; the irregular surface studded with small grains of a glandular nature explains to us how such a tumor, after bursting, turns inside out, and degenerates into a granulated mass of fungus, sprouting in berry-like knobs, and little masses of vascular granulation. Whatever cavity there is in a tumor of this solid consistence seems to me like a calix ready to burst, and turn out its inner surface, with a new and luxuriant growth of fungus. The dissection of such a tumor, having fleshy walls and granulated internal surfaces, always reminds me of the imprudence of partial incisions, in consequence of which a part of the walls of the tumor being left, the worst part of the disease is left : a fungus sprouting up from the

bottom of the wound is the first intimation of the disease being imperfectly extirpated, a rapid growth, hæmorrhagy, pain, and, in one word, cancer ensues : and these are as invariably the consequences of striking a lancet into such a tumor, as of imperfect and ill-concerted operations.

“ This gentleman is perfectly cured, the gums and adjacent teeth firm and sound ; and I confess I could not reflect on the structure of this small tumor, without saying within myself, what would have been the state of this tumor in three months ? What would have been his condition in six or eight ? In its second stage, in little more than three months, it must have filled the mouth with a foetid bleeding fungus ! In eight or ten months, it must have assumed the perfect character of incurable, loathsome cancer.”

It appears to me that, in many cases which I have been involved in, the disease appeared in a more insidious form, no circumscribed tumor, no formal disease awakening the attention of the patient, preceded the fungus ; no suppurated cavity opened, and turned its diseased surface out, in form of fungus ; but the mere separation of the gums from the teeth and alveolar process of the jaw had the same effect, for this is the description of what I have frequently seen ; and I saw this disease in a girl, who, I fear, never recovered. In this girl, not more than twenty years of age, the gums of one or more teeth became spongy, and rose in jagged points, separating from the teeth : the roots of these diseased parts of the gum became hard and tumid, in proportion as their jagged points became more soft and luxuriant ; the disease spread from gum to gum, till it extended along the whole

range of the jaw ; the whole substance of the gums became thus spongy, thick, and fleshy, rising into the form of a tumor, of a deep red or liver-colour, with a hard and schirrous basis, a bleeding surface, and cock's-comb-like edges : hæmorrhagies burst frequently from the general tumor, while a viscid and extremely fœtid matter issued from about the roots of the teeth. This tumor was so vascular, that the teeth, though poised from the sockets, and universally loose and vacillating, were almost buried in it, and strong bridles of flesh extended across, from that which was external to that which was internal, in regard to the range of teeth, through their interstices. To look into the mouth, you would imagine you saw it occupied totally with a very solid tumor ; when you pressed it with the fingers, you found it spongy and soft ; when you tried it with the probe, you found it a mere tissue of vessels, through which you could push the blunt point of it in every direction ; when you felt for the alveolar process with the probe, you were conscious that the bone was carious. By the general aspect of such a tumor you would be deceived ; for you would imagine it, especially in its early stage, to be nothing worse than a spongy intumescence of the gums, which you might successfully clear away with a scalpel, or almost scrape off with a spoon, while it is, in truth, a tumor so malignant, that I have myself performed, and seen others perform, very painful and very unsuccessful operations. It is one of a character so peculiar, that I know nothing but a careful and early extirpation of it that will prevent mischief in its latter stage, nor any thing but a fair, open, and candid prognosis can

protect the surgeon from obloquy : be assured it is unsubduable by the knife, cauteries, or caustic ; I have seen it, after long continued and cruel cicatrizing, grow for three months, the patient being permitted to retire from this torturing process to the country, only when hopeless and desperate, there to die unobserved.

The case which I am now to relate to you is one which was confided to my care too late to serve any other end than as a melancholy example of the consequences of leaving such a disease to run its natural course ; a timely operation might have preserved this worthy man in health to his family.

“ Mr. Keil of Monargan came to town to consult me late in the month of August, 1802, after a regular correspondence with his attending surgeons, Dr. Stewart and Mr. Nimmo. Though past the prime of life, he was a stout and lusty man, healthy, laborious, and active. His whole mouth was filled with a fungous tumor of the worst complexion, wanting no character of cancer, but that it was void of pain ; from imperceptible beginnings, and by very slow degrees, it had increased to such a size as to fill the whole mouth, press the tongue entirely to one side ; his speech was embarrassed, and his swallowing difficult and painful, for he could no longer close his mouth correctly, the tumor beginning to protrude. The tumor was of a deep red colour, irregular, and ragged on its surface, luxuriant, and of such rapid growth, that, in a few months, it had attained this horrible form : it projected from his mouth, kept his teeth separate, raised those of the lower jaw from their sockets, so that they (all those at least of the

right side of the mouth) stood high above the range of the adjoining teeth, and entirely loose, so loose that they could be picked out with the fingers, and some of them were picked away with the fingers before the incisions were begun. The tumor was void of stinging or lancinating pains, no rude pressure of the fingers excited any but the ordinary sensation ; it was soft, spongy, and bleeding in its extremities or cock's-comb-like edges, solid and fleshy in its middle parts, and bulging and firm as bone itself where it rose from the jaw-bone : it was neither on account of pain, dangerous hæmorrhagy, nor foetid ulceration, that the patient was now thoroughly alarmed, but by the rapid growth and horrible form of the tumor ; and, from the increasing obstruction of speaking and swallowing, he was conscious that he could not live, and desirous of any operation that might give him even a chance of surviving, for he was satisfied, there being no blood-vessels, nor other dangerous parts in the vicinity of this tumor, that the operation, though painful, could not be dangerous."

OPINION ON MR. KEIL'S CASE.

" Mr. Keil cannot have witnessed the doubts and difficulties of his attending surgeons, without being aware of that imminent danger, which it falls to my lot to announce to him ; and my duty and conscience equally incline me, to declare it without loss of time, and without reserve. A tumor so unusually rapid in its growth cannot cease to grow, but must continue to extend the disease by increasing the caries of the jaw-bone, and propagating the morbid action among

the surrounding parts : the hardened basis of the fungus will soon spread into the cheek ; abscess, and indurations of the lymphatic glands will ensue, each ulcer will throw out its fungous efflorescence, and the disease will burst out upon the face and angle of the jaw with all the virulence, and more than the deformity, of a real cancer : this resembles in its form that fatal fungus which sometimes sprouts from the axilla, after amputation of the cancerous breast, or that which still more frequently proceeds from the spermatic cord, after extirpation of the schirrous testicle, and which no methods, even the most severe and rude in surgery, have ever been known to subdue.

“I am of opinion that, though not accompanied with pain, nor as yet with much foetor, nor with profuse bleeding, nor bearing the precise character of cancer, this tumor is equally incurable except by the knife, and sure to prove fatal if neglected (as I fear it has already been neglected) too long. When I speak in favour of operation, I must do so with a degree of reserve : I wish I might propose it as a sure resource, but the difficulties, and the chances of success are so equally balanced, that he would, in my mind, be an inconsiderate and presumptuous man, who would, in these circumstances, confidently promise a cure ; but he would, on the other hand, be inhuman and selfish in the extreme, who, for fear of any reproach that might attach to his own reputation, would refuse our patient the only remaining chance of life and health. The terrible stage of ulceration, protrusion, and hæmorrhagy, and probably of pain, which is soon to ensue ; the loathsome and miserable condition, which is inevitably approaching,

would be more grievous to his friends, if, from any want of constancy, we should decline our help; and they will feel, at some future period, a degree of self-reproach for any present loss of time. But I am beginning to reason on moral feelings and duties, which belong to others, when I am expected, perhaps, to deliver only my opinion on the medical import of the case. I have, in the previous part of this letter, explained the grounds of this opinion, with unaffected deference to the judgment of those professional gentlemen who, having seen the beginnings, and watched the progress of this disease, have had time to reflect seriously on its nature and consequences. I advise the operation; and, should this be your opinion also, and the wish of our patient and his friends, shall be ready to perform it,—the best proof I can give of the sincerity of my opinion.”

This gentleman, conscious of his impending fate, advised by his surgeons, that this was the only chance he had for life, without concealing that it was but a slender chance, gave his consent, and became every moment more anxious that it should be done quickly; but so critical was his situation, that before the necessary arrangements were completed, a gland at the angle of the jaw had swelled, an abscess there was distinctly perceived, the hard basis of the tumor had run deep into the cheek, and, at this most inauspicious moment, when every thing had assumed the most unfavourable aspect possible, the impotency of the patient, and his friends, became very great, and I received repeated notes from Mr. Nimmo requesting and urging me to come.

Nothing can be more unpleasant to a surgeon,

who has any pretensions to skill, than an operation necessary, mangling, cruel, and savage in appearance, performed within the mouth, beyond the sight of the assistants, and where even the long incisions must be guided by the finger; where the dissection must be irregular, and the whole must be done blindfold, from the blood with which the mouth is filled; where the best surgeon can hardly say he is sure of what he has done, nor confidently think he has cut away the whole disease. The operation in this case consisted, First, In picking away some of the loose teeth which lay in the way of the dissection: Secondly, In a tedious and painful dissection, by which the tail, as I may express it, or a prolonged and firm part of the tumor, which connected itself with the cheek, was separated from its inner surface, near the angle of the jaw, and dissected down nearly to the chin; the cheek being reduced in all this extent to extreme thinness: Thirdly, In a long and direct incision guided by the finger, which separated the firmest part or basis of the tumor, from the whole length of the jawbone, from the angle all round past the chin, and nearly to the canine teeth of the left side, where alone the gum remained sound: Fourthly, In carrying a like incision, more dangerous by far in point of hæmorrhagy, round the opposite or inner surface of the jaw-bone: Fifthly, In dissecting away the tumor from the jaw-bone, from the side of the tongue, and from the whole circle of the mouth, a work not accomplished without frequent interruptions from hæmorrhagy, irregular, and which was performed by incisions rude and mangling: and, finally, all the teeth of the right side of the lower jaw were twisted

away with the tumor, and the bone scraped clear of all remains of the fungus, down to that decided line of incision, by which the root of the tumor was separated.

I need not say how careful I was to make the extirpation complete; or how much I risked in dissecting the cheek, so as to leave merely the thickness of the skin, not without a thousand anxieties and fears, lest it should slough off. I left this gentleman, on the third day, under the care of Dr. Stewart and Mr. Nimmo, and am sure that never were assistants more careful of their patient, nor more sincerely interested in the success of another; his pastor, Mr. Smith, took upon him, with the most charitable disposition, every little arrangement, nursed him, and watched him. Mr. Nimmo's report represented the progress of this malady, the promising appearance at one period, and the dismal reverse, not unexpected, which followed, after a few days of retirement in the country. He died in a painful and loathsome condition, with this terrible and foetid fungus, protruding both from the mouth, and through the opening of the gland which had suppurated at the angle of the jaw. Far from being any argument against the early extirpation of tumors, the whole scene struck me as a most melancholy instance of the danger of delay.

You remember that I do not profess to follow any perfect order; yet, if I did, I know none more natural than to arrange with tumors of the gums those of the cheek; or to compare the diseases of adjacent parts, especially where their constitution, form, surface, and internal texture, their glands, exhalents,

and other apparatus of secretion, in short, their entire structure is similar; and where by a very allowable inference, their diseases may be expected to be allied. So it is, I believe, with the cheeks and the gums, where the scirrhus indurations of the early, and the cancerous excrescences and fungi of the latter stages, are so extremely similar, and where there are but a few special differences, which are easily described.

The cheek is a part where no conspicuous gland (the parotid and the socia parotidis excepted) is seen; but the anatomist knows that it contains many minute glands, the glandulæ buccales. It is undoubtedly in these that the tumors I am now to describe take their rise. These tumors assume very early, and always before they arrive at ulceration, a knobulated and glandular form; where, the first knot or kernel is plainly glandular, and where the tumor, when it becomes irregular, and threatens cancer, plainly is so, being irregular, by the spreading of the disease from gland to gland. I know no disease which I stand more in awe of, and chiefly I fear it from these considerations, that it is rarely mild or stationary, almost always progressive towards something more alarming; and either the tumor is seated so much in the centre of the cheek, and so adheres to the inside membrane, as to make it difficult to extirpate it, for fear of making a large opening there; or by being seated further back, is so entangled with important vessels and nerves, as to make the extirpation a matter too critical to be attempted lightly. This is a disease of the most insidious nature, so slow in its growth that we are, from its long duration, diverted from any sense of danger: I have known it exist for

twenty years, and even from infancy, without assuming a threatening aspect ; when all at once, without any sensible cause, it has shown its malignant nature. While you are encouraging your friend or patient with hopes, that the tumor, which he cannot but think of at times with apprehension, is mild in its nature, it grows suddenly hard, reddens, ulcerates, and becomes cancerous. Or when you have extirpated the tumor, and dismissed your patient, confident in his sound condition, and self-contented in respect to what you have done, when you have long forgotten the operation and the patient, and can hardly prevail with yourself to believe that a disease so extirpated can return, letters come, announcing to you that it has grown again. Various inexpressible circumstances, of consistence, colour, and form, intimate to the surgeon the lurking danger. The tumors which I most dread are those seated in the centre of the cheek, deep within its substance ; connected at once with the inside membrane and with the skin, not moveable, firm, glandular, hard in their general substance, and irregular in their form, knobulated, and having, as a sort of centre, some one or more globular masses, also very firm, but which, in place of being hard, have a sort of elasticity, which gives the conception of their having cartilaginous walls of extreme thickness, containing a small proportion of gelatinous matter. And, in truth, it is so : these central globes are found usually to contain a gelatinous fluid ; but sometimes, nay frequently, a thick and gelatinous blood, partly clotted, partly fluid. Such a tumor is extremely slow in its growth, but is still growing ; little painful, but yet communicating

a general sense of toothache pain, or shooting ; sensibly aggravated in moist weather, or east winds ; and it is usually covered with a coarse and granulated skin, very thick and porous, like that of a lemon, firmly attached, in a considerable extent, to the surface of the tumor, and incorporated, as it were, with the substance of it ; this adhesion of the skin is ever a sign of danger.

Of such tumors I shall lay before you various examples, not uninstrusive, with operations sometimes fortunate, sometimes unsuccessful ; nor shall I be so unmanly as to conceal from you the cases in which I have been unfortunate, especially where the ill success may be imputed to any want of skill or conduct, for every such avowal must be invaluable to you. No man can be always wise, nor always fortunate ; he who pretends to unvaried success, is either a knave or a fool. I take especial pleasure in laying before you a case where this species of tumor was strongly characterized ; where it existed, perhaps, from birth, certainly from early childhood ; where the operations were such as I could not enter upon without reluctance, nor perform without encountering various difficulties. In the first, I fear, a slight fault on my part proved the occasion of great pain and danger to my patient, of a weary journey, and a second operation ; the recollection of which, though painful to me, may be useful to you ; and this I feel to be the surest way of restoring myself to placid and approving thoughts.

“ Mr. Taylor, a tall and slender, but strong and active man, not exceeding thirty years of age, was afflicted with a tumor, which had, indeed, existed

from his earliest years, but had increased lately with alarming rapidity ; assuming, at the same time, so malignant an aspect, that all those whom he consulted declared it dangerous, wished that it might be extirpated, but declined performing an operation attended with so many difficulties. In this disturbed and agitated state of mind he travelled from a remote part of Ireland, to commit himself to my care. The indolence of this tumor from childhood upwards ; its sudden increase of growth, from imprudent and violent exertions ; its hard irregular form ; the coarse and porous skin with which it was covered ; the firmness with which it adhered to either surface, viz. to the skin of the cheek, and to the membrane of the mouth ; the redness it contracted, and the shooting pains which began towards the latter stage of the disease ; the manner, also, in which it was consolidated into one substance with the whole cheek, and the apparent impossibility of extirpating it without actually cutting the cheek itself away, were circumstances particularly worthy of attention. This tumor, he was well assured, had existed, if not from his birth, at least from his early infancy, in the form of a small, firm, kernelly tubercle, seated within the substance of the cheek, not far from the angle of the nose ; nor can he recollect, during all the period of his youth or manhood, any circumstance, either of pain, swelling, or change of colour, which called his attention to this tumor, much less alarmed him. He had arrived at his thirtieth year, when suddenly, in consequence of violent exercise, in very sultry weather, and in the open air, he observed, first, slight and transitory pains in the tumor, but such as never should have alarmed

him, had he not been wakened from this supine and unreflecting state of mind, by a manifest and sudden increase of size. Then he thought of rubbing the part with mercurial ointment, and applied to his brother, who is of our profession, for his advice. Then, for the first time, he began to feel all the unhappiness of a man in danger of cancer, and doubtful whether even the severest operation could afford him relief; and, with all the agitation of one occupied with such dismal reflections, he consulted every one who was accessible to him, and still, as he passed through the country, sought new counsel; and every where he had the unhappiness to find, that his disease was regarded as desperate, and the operation as barely practicable. He consulted first his brother, who, far from concealing his danger, told him how doubtful the issue of an operation was, counselled him against it, and advised him, that he should apply mercurial plasters. Next he consulted Dr. Collins, who declared the tumor too large, and the part too particular, to admit of operation. Next Dr. Henry, a gentleman reputed a good and bold operator, who wished it were removed, proposed the operation, continued to talk about it, but declined performing it; and far from denying the danger of such a step, advised that Mr. Taylor should first try the effects of the decoction of woods, with corrosive sublimate, in gentle doses.

“ Six months had now elapsed, from the time of this conspicuous increase of size: the tumor had attained to more than twice its original bulk; there had been an accretion of many lesser lumps to the main body of the tumor; and before the course re-

commended by Dr. Henry, in little more, indeed, than three weeks, the tumor had increased to four times its original size; the pains were become more pointed and frequent; he was obliged to be careful of it, and preserve it like a part affected with toothach or rheumatism from cold, and the vicissitudes of the air; and in damp weather, or severe cold, he was tortured with pungent heat and shooting pains, the heat and shooting pains being peculiarly felt in that part of the tumor which was most conspicuously increasing in size.

“ But if those shooting pains, and this sudden increase of size, were ominous, the change which next ensued was more perplexing and alarming; for on its internal surface it began to connect itself not only with the inside surface of the cheek, but with the substance of the gums; an irregular excrescence projected into his mouth, which he compared with a claw or horn, and of such length and bulk, that being checked by the teeth during sleep, it was torn away with a considerable effusion of black and foetid blood. On the external surface of the cheek, the skin thickened, became porous and coarse, adhered to almost the whole extent of the tumor, was puckered and pursed up, at the place where the lesser glandular lumps were grouped and knotted round the chief body of the tumor, which was very nearly in the centre of the cheek.

“ Alarmed by such decisive changes in the character of the tumor, he delayed not a moment to call Dr. Henry, who promised to perform the operation, and expressed reluctance only on account of certain blood-vessels, especially of the infra-orbitary nerve

and artery, which he feared would retire into their hole under the cheek bone, before the artery could be secured. This discouraging suggestion, and an express declaration that the tumor was of a schirrous nature, induced Mr. Taylor to travel on to Mr. Davies in Drogheda, a gentleman reputed successful in the cure of cancer ; but, though he acknowledged this to be a cancer, as it was not yet ulcerated, he declined applying his remedies, and advised him to travel on to Edinburgh, and have it extirpated. It is not to be told the variety of surgeons to whom he resorted, to Dr. Daniel, Dr. Collins of Charlemont, and Dr. Caldwell ; and, at every step of this pilgrimage, he was told of the danger of the disease, of the difficulty of the operation, and the prudence of coming directly to this city.

“ I might, without indelicacy, submit to you his own narrative ; for any accidental compliments to my professional talents which it contains are such as are addressed by every patient in these difficult circumstances to every surgeon whose kindness has inspired confidence, or on whose professional talents he imagines he may rely ; but I shall be more usefully employed in describing the tumor I had to extirpate, the peculiar characters of malignity which made the operation necessary, and the peculiar circumstances of place, form, and connexion, which made the enterprise difficult.

“ My patient was of a pale complexion and melancholy temperament, and, after a journey so cheerless and inauspicious, where he was told, at every step, the danger of this disease, and the difficulty of that operation from which alone he could expect relief, he

was too unhappy and dejected to receive any consolation from my assurances. The tumor was not of that size to be esteemed monstrous in any glandular or fleshy part, but it was great in proportion to the part in which it was seated ; it was of the form represented in the sketch, Plate I. of a stony hardness, firmly connected with the substance of the cheek, of a globular form, and surrounded by small subsidiary tumors, seemingly of a glandular nature, firmly condensed and mixed in their substance with the main tumor and with the substance of the cheek. The skin was thick, with gaping pores, a coarse granulated texture, and a very firm adhesion to all the tumor, except its very apex ; and in the centre of this granulated skin were livid tubercles, about the size of a boy's marble, extremely hard in their substance, and of a very ominous appearance ; and where these projected a little below the centre of the cheek, the skin was puckered and drawn in. While the external surface was thus connected with the skin of the cheek, so as to draw the angle of the mouth obliquely upwards, the internal surface was very dangerously attached, not only to the inner surface of the cheek, but to the gums ; the inner surface of the cheek felt, upon introducing the finger, tuberculous and rugged, and extremely hard ; and the tumors, when felt from within, appeared distinctly to be the same indurated schirrous substance which projected from the external substance. Upon inverting the cheek, these tubercles were seen knotty, irregular, and rugged like piles, or like those venereal warts of the anus which are termed *fici*. Where this diseased substance approached the angle of the nose, it adhered very firmly to similar



own by J. Bell.

Engraved by E. Mitchell.

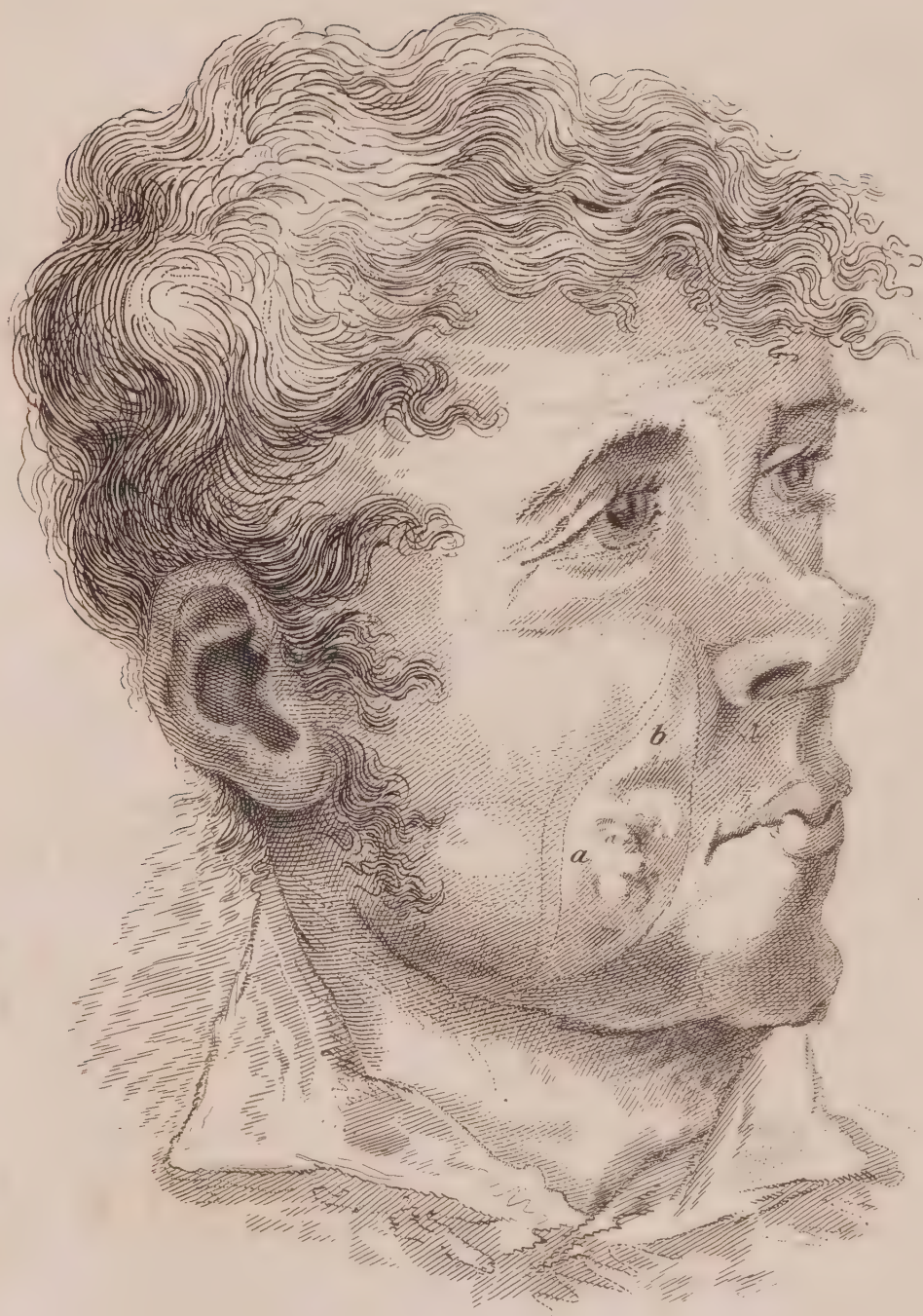
SKETCH OF M^r. TAYLORS N^o. 1.

tubercles springing from the gums ; and the shooting pains, now severe and constant, together with the dejected appearance and sallow complexion of Mr. Taylor, joined to the united opinion of many of our profession, could not fail to impress me with a confirmed apprehension of its malignity ; but that only inspired me with a greater desire to give him the only chance of life.

“ In respect to the projected operation, no circumstances could be more discouraging than those I have just described. I was conscious that, in attempting to save him, I must not merely extirpate a tumor by nice dissection, but cut through the cheek, and dissect away almost all its substance ; that I must divide the facial artery below, and the transversalis faciei coming from the temple, and the labial artery returning from the lip ; that I must not merely wound, but cut away the salivary duct, and lay the whole side of the face open, making a breach larger than the mouth. It could not but seem problematical, whether, after such an operation, the saliva, or food, could ever be retained again ; whether the attempt would not involve me in disgrace ; whether I should not be blamed deeply for adventuring on that operation which so many had declined. But I was emboldened by this recollection, that often by a grape-shot, or by a splinter in battle at sea, the whole cheek is carried away, and sloughing succeeds to immediate loss of substance ; that I had every reason to believe, though much of the substance of the cheek must be cut away, I should be able to bring together the remaining skin of the cheek. I most of all considered that this gentleman had travelled from a distant country, and,

leaving behind many skilful and dexterous surgeons, came to commit himself with resignation and confidence into my hands ; that I owed him some sacrifices in return ; and that, unless I attempted to save him, he must at no remote period die of cancer ; I, therefore, sketched the plans which I am next to explain to you, and prepared myself for the operation."

The hooks, knives, and forceps necessary for such a dissection being properly disposed, with needles for tying the arteries, I proceeded with an operation which could not fail to be extremely slow, since its principal purpose was to dissect out the whole disease, and save, as much as possible, the sound parts. The form of the incision is explained by the dotted line in the sketch, Figure 3, where (a) marks the tuberculous and discoloured part of the tumor ; (b) the part approaching to the angle of the nose, where the tumor adhered firmly to the gums within, and the dotted line designates the oval form of that incision, by which I cut clean away whatever seemed dangerous of the thickened skin, or tubercles connected with it, abridging thus unavoidably the portion of the integuments destined to replace, or, at least, to close that opening made by cutting away the body of the tumor, and, of course, the substance of the cheek. I drew my knife in the direction of that line of feature which marks the levator oris, and surrounded the tumor with a second incision like the first ; but, approaching very closely the angle of the mouth, I proceeded to dissect away the tumor from it and from the jaw-bone, and thought it singular, that the labial artery where it approaches the lip, and the facial artery where it turns over the angle of the jaw,



SKETCH OF MR TAYLORS HEAD N° III.

Drawn by J. Bell.

Engraved by E. Misk.

were so elongated, without being divided, that I slipped a ligature under each of them with the needle, without pricking even the cellular substance, and tied them before cutting them across.

Having turned the tumor upwards, I cut through the inside membrane of the mouth, cut sheer and clean away the tuberculous prominences of the gum, dissected upwards towards the eye; and, when much of the tumor was detached, regarding the infra-orbital nerve as the most important and painful part of the dissection, I reserved this as the last stroke; and while I dissected this part, and especially when I cut the nerve across, he suffered an intensity of pain, which made him quite savage; it was then, only, that he stamp'd with his feet, and cried out in agony*.

* I have always observed that the cutting across a nerve produces an inconceivable shock, and of this nerve especially a dreadful pain, which is on no occasion so manifest as when the operation of cutting across the nerve for the cure of the *tic douloureux* is performed; for then the cutting across the nerve is complicated with no other incisions to confound the sensation, which is at once so peculiar and so alarming, that the patient feels as if shot, and starts up in agony inexpressible; and this first sensation is instantly followed by a pleasing calm, and a happy and perfect relief from pain. Those whom I have seen labouring under this singular nervous disease, have had the affected side of the face reddened, the cheek convulsed, the lip quivering, and the eyes filled with tears from the intensity of pain. One old man, about seventy years of age, who was cured in an instant of a disease of many years duration, by my worthy and much respected friend Mr. Harrison of Ulverston, had this convulsion and trembling of every feature in a singular degree. Another old gentleman, Capt. G. of R——, in Inverness-shire, had this incessant trembling of every feature, as if each muscular fibre of the face had been struggling in an indetermined condition, betwixt convulsion and paralysis; and this convulsion was accompanied with such agonizing pains, and wild and piercing cries, as actually alarmed the street in which he lived: but I shall describe his condition in his own words, as dictated to my assistant Mr. Allan:

It was removed, and before the next step of the operation, the gap seemed horrible, even to me. The side of the face was open, the range of teeth in both jaws quite exposed : in spitting out the blood, it issued through the cheek ; and the tongue, when

Capt. G. was, at the period of the operation, about seventy-five years of age.

“ One afternoon, about eleven years ago, while sitting at dinner, I was suddenly and severely attacked with sharp and thrilling pains, beginning at the root of the wing of the nose, extending all over the right side of the face, centering in the cheek, but shooting in a particular manner upwards by the corner of the eye into the temple : the fit was momentary, but the cheek, the lips, and eyelids, quivered and were convulsed.

“ From this time I have been always subject to this torturing disease, which has been the occasion of various journeys to town, and innumerable consultations : my sufferings sometimes intermitted for weeks, during which I was almost entirely free from pain ; and often again I suffered six or seven severe paroxysms of convulsion and pain, in one day, and as many during the night. I was for two years contented with the advice of my surgeons in the country, who prescribed blisters, and many other applications both severe and trivial, but with so little good effect, that they ascribed my disorder to worms in the cavity of the upper jaw. About two years after the first attack, my disease assumed a more determined form, and returned in paroxysms with a degree of regularity : after a lapse of two or three months, it would return for an equal period, and continue to torture me, so that my appetite and sleep left me, my memory even seemed affected, and my general health suffered.

“ About four years ago I came to Edinburgh, and put myself under the care of a surgeon of distinguished reputation, consulting, at the same time, Dr. Gregory Grant ; and, by their conjoined advice, I had the gums of my upper jaw scarified, and three or four of my grinders extracted ; and, after remaining some weeks under their care, I returned home seemingly well, and felt nothing of my disease till about the third month, after the scarifying and the extraction of my teeth, when suddenly it returned in all its violence, and continued to distract me for two years more.

“ At the end of two years I was again driven to town by this distracting malady, and having put myself under the care of the same gentleman, and having called Dr. Monro into consultation, he directed that the only remaining grinder on that side of the upper jaw should be pulled, and I was then sent home, but without the slightest alleviation of my disorder, which I endured for two years longer.

he turned it that way, passed through the opening, not through the mouth, but through the under opening of the cheek, so that my assistant found it right, to prevent the alarm of the patient, and decent in regard to the spectators, to pursue the parts to-

“About three weeks ago I arrived in town a third time, and, after a very formal and numerous consultation, it was resolved to try the expedient of cutting across that nerve which passes under the eye to the face: my agonies were now so dreadful and unremitting, that often I was obliged to start up from table, and could not refrain from cries and howling, such as were but too distinctly heard in the streets. The operation was accordingly performed by one of those gentlemen, who made the incision you see beneath the eye: for some time I flattered myself I had derived all the benefit that was promised me; and even when my pains returned, I was over-persuaded that those were the slight remains of a desperate disease, and would be transient. In this persuasion I had, I may say, begun my journey; I had got into the post-chaise which was to convey me from town, when I was seized with a paroxysm so agonizing, so very dreadful, that I was carried back into the inn, and have now resumed my place in lodgings, to commit myself to your care.

“April, 1804.”

I doubt not the reason of the *tic douloureux* returning, is often, like the ill success of vaccine inoculation, to be ascribed to the manner in which the operation is performed. The performing of this nice and delicate stroke of the knife was probably confided, in this case, to a gentleman whose first and only dissection of nerves had been in the living subject; his ill success was sufficient warrant for this conclusion: it was impossible for an anatomist to look at the scar of his incision, without an instant conviction, that it did not at all cross the course of the infra-orbitary nerve: deceived by the baggy eye of a man advanced in years, and feeling only for the margin of the socket, he had carried a long incision in the direction of the natural lurk of the skin, and certainly could touch only the rim of the socket; it is far below this, that the nerve lies in a deep hollow. My education, and my experience, put me, I believe, far above the puerile vanity, and, I hope, above the suspicion, of magnifying beyond the truth this trivial success; I could not but know the infra-orbitary nerve a little better than my predecessor, and could not fail to cut it. I seated my patient in a chair, and, pressing the point of my fore-finger deep into the hollow where the nerve lies, cut it across, by striking in a small sharp-pointed knife, making no length of outward incision, and hooking the point of the crooked

gether, and cover them with his hand. In short, it was such an appearance as you will willingly hide from yourself.

But it was a pleasure to see how nicely the parts fell together, when smoothed down with the palm of the hand, and how little they were pursed when sewed. I make it, in all operations, a rule, to let even the oozing of blood cease before I lay the parts together. Having allowed some time to elapse, I proceeded thus :—First, taking the edge of the buccinator muscle, much of which I had saved in the dissection, I raised it towards the cheek-bone, sewed the edge of the muscle to the rags of the inside membrane of the mouth, and to the strong cellular and muscular substance under the most prominent part of the cheek-bone, and carrying the thread inwards and tying it on the inside of the mouth, I there cut it quite short, resolving never to look after

bistoury behind the nerve: in the very instant of the stroke by which it was divided, Capt. G—— started from his seat, ran forwards in great confusion, exclaiming, “Good God! what’s that?” He sat down instantly in perfect composure, free from pain, unconscious of the operation being performed, and expecting it: when questioned about the sensation which made him start up, he said, he felt nothing but as if he had been shot in the head, followed by a momentary confusion, and a total relief from pain. He said he did not imagine the operation done, because the first operation had been a deliberate dissection: he felt now perfectly confident that he was cured, and returned home in two days, since which time, he has lived in perfect health, is happily married, and continues well at this moment.

I have only to observe, that those gentlemen who have the happiness to be born operators, and to be endued with such natural genius and talents as to be emancipated from the wearisome and disgusting tasks of study and dissection, though they are of course very successful in amputating limbs, can not expect to be equally so when the question is about dividing a nerve.

January, 1807.

it, but leave it to suppurate out. Next, I passed a deep stitch through the upper part of the incision, where force was required to bring the parts in contact or to hold them so there ; in the hollow I meant to lay a soft and large compress. But the lower and central parts of the incision, where the flaps of skin were more easily approximated, I joined, by passing three delicate sewing needles, as harelip pins, through several points of the wound ; the intermediate points I drew nicely together with plasters. I was careful to use the least possible force ; to make no strain by the sutures ; to lay my compresses light and soft in the hollows ; and to roll my bandage round the jaws very equally and gently, for the teguments were most alarmingly thin, and the slightest inflammation would have caused the whole cheek to slough, so as to leave the parts in a dreadful irremediable condition, with the saliva continually flowing over the cheek, the speech imperfect, probably unintelligible ; and the patient would have found no way of being nourished, but by pouring the food down the throat, in place of masticating or swallowing it. Happily the skin adhered in a few days ; the needles were withdrawn : in a fortnight he was cured.

But the slightest speck or spot of imperfection in such a work is followed by severe self-reproach. I am not sure that I observed my fault during the operation ; but, certainly, after the cure, I took an alarm, far from groundless. I observed a small glandular-like knob towards the lower part of the cheek, which I ingenuously warned him might be the source of future distress, as the small tumor, indolent during his infancy and youth, had been suddenly the cause

of this mischief; I took his promise that he should be observant of it.

This error, so opposite to my experience and conviction, so unlike my general maxims and conduct, I sorely repented. It was at the distance of three years from the period of this operation, that I received a succession of letters from my patient, announcing the return of the disease, and asking permission to come once more to this country, to put himself under my care. The small glandular knob, which I required him to watch, had increased in size; and the gums, also, had begun again to shoot out small tubercles; that the new swelling, and the return of the disease, had begun in this small glandular knot, no bigger than a pea. I remember only from his conversation, not from his letters: from the complexion of these, one should rather have concluded, that the new growth was only in the gum, beginning in the angle betwixt the gum and cheek, and in the centre of the cheek; a part of the tumor, in the extirpation of which I surely had not to accuse myself of any fault*: and from the slightest and most imperceptible

* “ Sir,

Cookstown, County Tyrone, Oct. 9, 1803.

“ It will be no doubt unpleasant to you, as it is painful to me, to have once more to trouble you on the subject of my old complaint; the following is, as nearly as I discover, the state of my cheek at present.

“ Above my teeth, on the outside of my gum, as high as where the cheek and gum unites, there did appear, more than nine months since, a lump, about the size of a small pea. It was not, however, attended with the lancing pains which I always found in the original tumor, but rather, at the approach of damp weather, I found it tender and sore. Soon after something similar made its appearance right over it, rather in the cheek, and appeared to press down on the first; this first soon after began to get less, and was soon reduced to its original small size, at which it continues. The other continues, and is about the size of a hazel nut; has not got any

beginnings, viz. a small longitudinal thickening along the scar of the wound, a small pea-like hardening near the lower part of that scar, and a similar hardening betwixt the cheek and gum, it grew with such rapidity, that from week to week its increase was manifest ; and in less than two years, it had attained fully its original size, accompanied with pains, more

thing larger for the last six weeks ; is under the upper end of the original wound, appears outwardly growing from where the gum and cheek unites, and its upper side is concealed within the cheek, while the rest appears fixed in the gum. This, however, is not to me the most alarming symptom. About the centre of the first long wound, there did, about nine months since, appear, on handling, something about the size of a pin's head, which has continued slowly to increase.

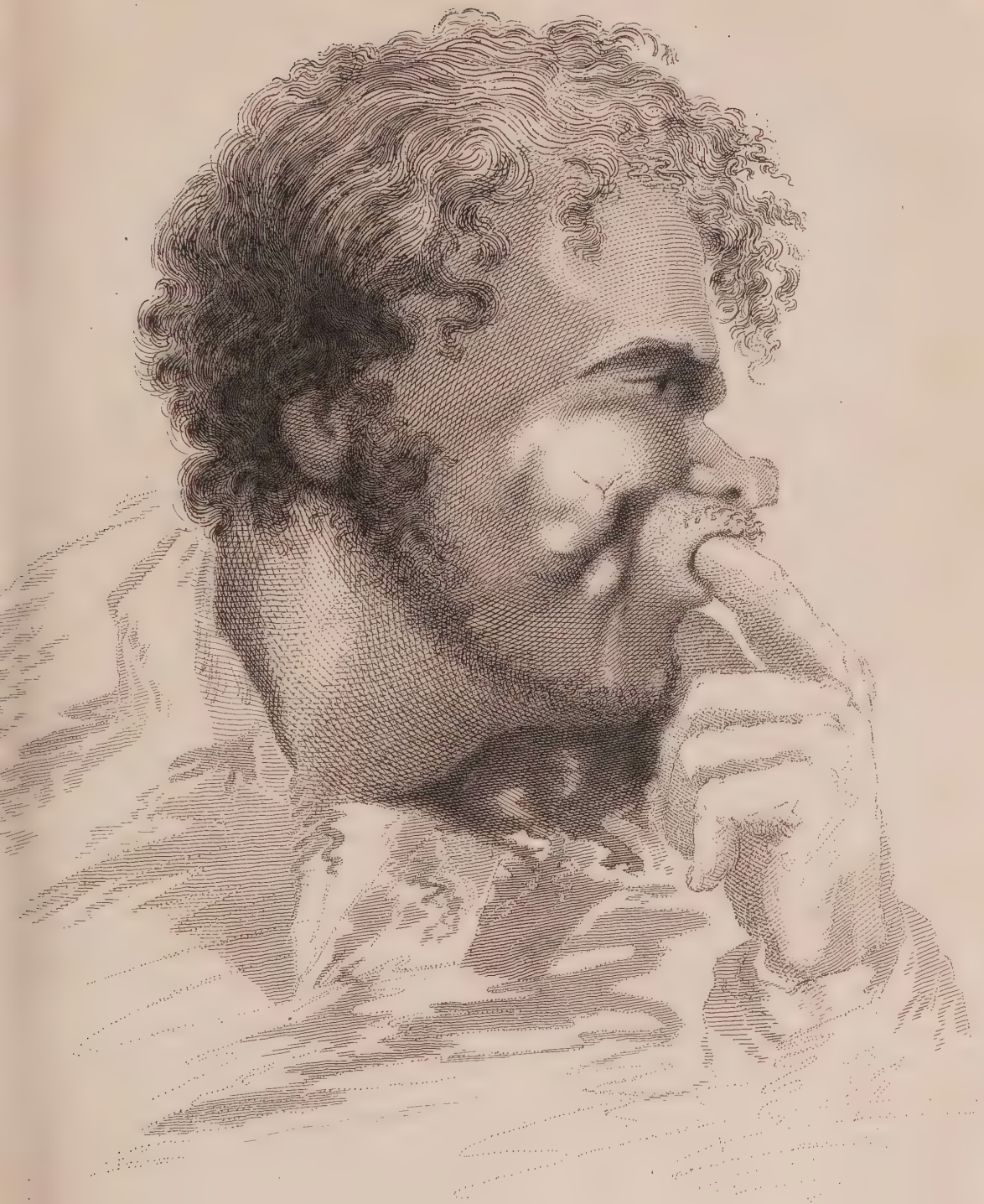
“Also, as far as the finger can stretch into the cheek, where the cheek and gum unite, but rather on the cheek, just under the projection of that part of the cheek-bone, which is nearest to the eye, there is a lump of an oblong form, about the size of a hazel nut, but I do not observe it increasing, nor attended with any pain.

“The following is the most alarming symptom of all to me, from its now being in a state I may say of weekly increasing.—About six months ago there appeared, on fixing one finger on the inside, and the other finger on the outside of my cheek, something like a lump, which however did not give me much uneasiness until lately ; it at present seems to be rather of an oblong form, taking its direction towards the cheek-bone ; does not seem very hard to the feel ; is not attended with very frequent lancing pains ; the cheek on the outside appears rather swollen, but not any thing discoloured ; there is no protuberance either in or outside as yet. I have found for six months past very frequently lancing pains in and about the original wound, not however confined to any particular place.—My dear Sir, all these threatening symptoms may not signify, but I considered it my duty at all events to communicate them to you. Mr. Joseph Young, student, the bearer, who I made to examine my cheek, will, if required, perhaps, further explain these apprehensions. Hoping you will have the goodness to write me,” &c.

It was not till another season, or rather I believe sixteen months, had elapsed, that the cause arose :—then I found not these indications of an incipient tumor, but the tumor fully formed, as large as at first, and far more unfavourably circumstanced for any operation, not only by its numerous strong adhesions to the gum, and its absolute consolidation with the substance of the cheek, but also by the great loss of substance in the former operation.

distinctly lancinating, more poignant and frequent, than in its first stage. Again he travelled from Tyrone to this city; and, after many perplexities and fears, submitted again to the operation. I, on my part, had no slight motives for anxiety, for now actually the whole cheek, the skin excepted, was to be cut away; the buccinator muscle, and the living membrane of the mouth, were both to be cut out; and I was shocked to think how possible it was, how far from improbable, that the whole cheek, even from the slightest overstraining of the suture, or the slightest accidental fever, might gangrene and slough, and leave a horrible chasm.

The drawing, No. 4, is a sketch of this tumor, in the posture in which Mr. Taylor often laid himself, and with his finger, as usual, in the mouth, feeling the tubercles on the inner surface, and the disease of the gums. The tumor was almost as large as at first; the great glandular-looking substance, rounder and more uniform; the livid part of the surface of greater extent, and a stage nearer ulceration; and the scar of the former operation binding the tumor firmly along its whole length; and, except in the very apex of the most bulky and prominent part, where indeed it was more elastic, the whole was of a stony hardness, accompanied with perpetual pain, by which, together with his fatigues, and fears, in this wearisome journey, he was greatly cast down. It now also approached so close to the angle of the mouth, that I saw no way of extirpating the tumor, and leaving more than a quarter of an inch, hardly so much, entire, betwixt the gap made by the extirpation of the tumor and the mouth.



drawn by J. Bell.

Engraved by E. Mitchell.

SKETCH OF M^r. TAYLOR'S TUMOR IV.

I proceeded to make, first, a long incision, bending a little, so as to include all the tumor that was below the cicatrix, and which, in bending round the tumor, almost touched the angle of the mouth (a), sketch No. 5; next, a similar incision (b), bending upwards, in such a direction as to include the scar of the former operation, the puckered and adhering skin (c), and a part of the tumor, all that part to which the skin inseparably adhered. Those two incisions included that part of the adhering skin which required to be extirpated, in the same manner that we usually include, within an oval incision, the nipple of a much indurated mamma. Thirdly, I made a transverse incision from the temple, (i. e.) from the tip of the ear over the zygoma, directly across the face, which, meeting the first oval incision, made two flaps. But it is only at (d) that the angle of this incision can be seen; its beginning is hidden by the projection of the tumor, and the two triangular flaps of skin dissected up from the tumor are marked (e e). The tumor I found now more regular in its form than I expected, sacculated, and very dark and bloody: I, after raising the angles of skin from the cheek and face, and saving all of the skin that I could save, dissected all round the tumor, and reserved those parts of the dissection for the last in which I had to divide arteries. I then dissected out the tumor from the angle of the mouth, and tied the labial artery; then dissecting down through the angle (f), the lowest part of the incision, into the cavity of the mouth, I tied there the trunk of the facial artery; and, finally, dissecting out the tumor from under the cheek-bone, and tearing it from the zygoma, a most difficult and painful dissection,

I tied a large branch from the transversalis faciei. The veins spouted out blood profusely when cut, but shrunk instantly : the arteries thus successively tied bled none. I never, indeed, performed so unseemly an operation so bloodless.

Now observe, that in all these points, and to the full extent of the tumor, I was obliged to go fairly through the cheek, and cut every thing sheer away, for it was all tumor. The tumor looked formidable when it presented itself, in time of dissection, high above the separated flaps of skin, and the chasm was horrible when it was cut away ; the flaps, consisting of skin only, were so thin, that I was in despair when I laid them together : I solemnly declare, that nothing ever astonished me more than the speedy cure, which was such as must give me courage on all occasions that may in future occur. First, my assistant, Mr. Allan, brought the edges nicely together, and passing a needle through the three points of the incisions, I brought them all together in one star-like centre, exactly in the middle of the cheek. But one ligature, though it approaches two points nicely, cannot go under a third, and bring it into contact with the other two, without turning over and passing from within outwards ; in consequence of this awkwardness, for which I was provoked with myself, I had almost balked the great purpose of reunion, and that, too, at the very centre of all the sutures, and, therefore, endangering each of them, and, of course, in the centre of the cheek, so that the whole cheek was endangered ; but fortunately the suppuration, in this central point, was very slight ; yet, however slight, it grieved me, as it plainly proceeded from my

awkwardness. I then took the most delicate sewing needles, mounted on small wooden shafts, like pencil sticks, and passing two needles from side to side across each long incision, I brought the sides of the three radiated incisions into the nicest contact imaginable, careful always not to twist my threads round the needles too tight; and I passed one very delicate needle close to the angle of the mouth, to secure that point.

This I do on all occasions, and always very deliberately; and, at some distance of time after the operation, and when there is no longer any bleeding to discompose me, and every thing sponged, clean, nice, and dry, I take narrow strips of linen, and dipping them in warm glue, lay them across the incisions, and these being well dried, and hardened, and the needles kept clear of the glue, I can, without risk, on the end of the second day, or on the third, before there can be the slightest risk of suppuration, slip out my needles one by one.

So I did in this case: the less necessary needles I withdrew on the second day; those on which more depended, I left till the third and fourth days; and the needle nearest the centre I left longest. I draw each needle with nice forceps, turning it first a little vertically, that there may be no tugging. I often pass a thread into the eye of the needle, that I may pull quite vertically, and often pass a flat stick betwixt the ends of this thread, and, twisting the ends round the stick, turn the needle vertically, and so loosen it with so true a motion, that there is not the slightest sensible violence, nor the smallest drop of blood; and before I attempt to move a needle, I take a hair

pencil, and, by washing and cleaning the point, and oiling it, prepare it for passing easily. This method I have long used in all delicate sutures, especially in extirpating small tumors of the face and jaws, and in hare-lips. It was in this manner I reunited a second time (the operation having been very mal-adroitly performed upon him when a boy) the hare-lip of Mr. Whirter, surgeon, of Newcastle, with a scar hardly visible, and with an evenness of lip which enables him to blow the flute very delicately. He was conscious of the necessity of this second operation, and gratified with the success of it.

I have another remark to make to you, that though a needle is withdrawn, its twisted suture remains upon the surface, caked with blood, and is a security to the wound ; and always, upon withdrawing each needle, I heat the glue-pot again, and dipping a hair pencil in it, I wash the remaining ligature, or twisted thread, with glue, so that the needles being removed on the second, third, and fourth days, there are substituted to them various strips of fine linen with glue, and the pencil being carried over all parts of the incision, the whole is held firmly yet gently together by a cake or plaster of glue, which need not once be troubled till you find it safe to wash off the whole at once.

This, compared with the common adhesive plaster of wax, is a nice and cleanly manner of performing those operations in which so much depends upon delicacy, and the nice and curious contact of all the edges ; for any one point left open endangers the whole line of suture ; and this method had, in the present instance, such perfect success, that in ten

days Mr. Taylor began his journey to Ireland perfectly cured, and with less mark of incision, and a more perfect evenness of cheek, than at first*. In an hospital, an unhealthy season, or an unsound constitution, the whole of such incisions must have sloughed off, a dreadful and an irremediable calamity ! but in this healthy and vigorous young man the parts united most happily.

In operating on this tumor, I was surprised to find a very singular connexion betwixt the veins and the central and more conspicuous tubercles, which were, indeed, firm but elastic sacs, of pure and coagulated blood, inclosed in very thick and solid walls ; and, upon dissecting the tumor after it was laid upon the table, the great tubercle being cut open, and the hard and clotted blood turned out, it was manifest and visible, distinctly visible, that these cellular cavities had communications with the greater veins.

Many distressing, and some fortunate cases of this nature have been under my care ; tumors of a less malignant nature, and easily extirpated, present themselves daily, and excite no perturbation ; but I would endeavour, by relating less favourable or fortunate cases, to enure you to difficulties and disappointments.

“ Mr. S——, a venerable old man of sixty years of age, remarkably strong, active, and athletic, for his

* The part was not covered with lint or compressure, for fear of disordering the needles, or concealing any accidental inflammation ; but to prevent any ill consequences from the extreme hollowness of cheek, a nice fitted plumper, or compress of soft rolled lint, was introduced into the mouth, and the jaws bandaged, to prevent motion during sleep, and he was hardly permitted to lie down in bed, for fear of some mischance.

time of life, had been long subject to a very dangerous swelling of the parotid gland, which now manifestly declined to a state of cancer. The tumor began early in life, and was extirpated twenty years ago by Mr. Dunlop, a celebrated surgeon in Glasgow : but a gland, in which the trunk of the carotid artery is so entirely imbedded, can never be entirely extirpated thence. It having grown again slowly, Mr. Dunlop declining himself to perform the operation, and yet desirous that Mr. S—— should have every possible chance for life, has requested me to receive him under my care.

“ The tumor is divided in the middle by the scar of the former operation ; along that line it is irregularly straightened and bound down ; it rises on each side of the scar, in knobs or apices of a stony hardness, reddened of late on the surface, with a coarse granulated and adhering skin. The whole surface of the tumor is of a dusky red, and its extent very great, for it covers all the flat part of the cheek ; a flattened part rises over the zygoma, towards the temple, to which it adheres very firmly ; one glandular and almost separate lump lies far forwards upon the cheek, and seems to me a tumor of the socia parotidis, while the rest is a tumor assuredly of the parotid itself. The tumor is so large as to be flat, though bulky ; the most salient point is that which lies immediately before the ear, the lap of which is turned back by it ; another branch, I may call it, of the tumor, lies under the lap of the ear, and presses it upwards ; the chief mass of the tumor lies upon the cheek, but a very bulky part lies deeply imbedded behind the angle of the lower jaw-bone ; and this

general form and relation of the tumor to the adjacent parts are represented in the sketch, No. 40, all except the unpropitious appearance of it, for it was of a deep red colour, sensibly inflamed, the inflammation increasing every day, with a deep and stunning pain, while all the basis of the tumor was hard as stone.

“Nothing can be more unpropitious than the state of this gland. First, it is a disease returning long after its growth had been interrupted by amputation: secondly, it is very firm, of a stony hardness, very irregular and knobby; that part which lies out upon the cheek is bound down firm and flat, by the fascia, or tendinous membrane that descends from the zygoma, and by the platysma myoides muscle: thirdly, it is growing sensibly and rapidly, and its surface has begun to take a deep and livid colour, while very poignant and torturing pains shoot through the tumor, prevent his sleep, and distract him while awake. This schirrus has every character of approaching cancer; it is most likely too late to attempt the operation, yet what would not one do or suffer to preserve life? The operation, too, is full of danger: this gland cannot be extirpated but by deep incisions, and a very severe and slow dissection; at the best, it cannot be separated from the angle of the jaw, without cutting the portio dura of the auditory nerve, and paralyzing the cheek, nor without dividing the temporal, facial, and other arteries; perhaps it may not be possible to extirpate it totally, for fear of wounding the very trunk of the carotid artery, and that operation which is begun with the knife, it may be necessary to finish less perfectly with the ligature. This is the first

time I have been obliged to think of such a resource : the latter part of the operation must be performed by poising out the gland from the deep hollow under the zygoma, and behind the angle of the jaw, and then it may be necessary to strangle with the ligature, what assuredly we dare not amputate with the knife.

“ I came to this decided conclusion in my own mind, that, though a case the most unpromising I had ever witnessed, it was my duty, in compliance with Mr. Dunlop’s and his patient’s wishes, and with Dr. Monro’s advice, to perform the operation, difficult as it seemed, and it was plainly such as admitted of no previous plan, but required that I should be guided by circumstances, and my past experience.

“ I can hardly enter too much into the detail of such an operation, seeing especially that it had an unfavourable issue ; I entered upon it with more than usual composure, with more than I thought natural to the occasion, but I believe it was the very difficulty of the case that reconciled me to my task, for I was conscious, in such difficult circumstances, I was entitled to stop, that it was my duty to stop, the moment I approached any dangerous point ; that I was no way responsible for extirpating the whole tumor, nor for doing all with the knife. The peculiar complexion of the tumor, for it was now inflamed almost to ulceration, and accompanied with lancinating pains, was unfavourable to our hopes ; its growth, after being once extirpated, confirmed the suspicion of its being of a cancerous nature ; and the parotid has the temporal and maxillary arteries imbedded in

it, while the portio dura, or middle nerve of the face, that great nerve which runs across the cheek, and goes to all the side of the face, passing through it in many branches, so that it absolutely cannot be cut away from its root, which sinks deep behind the branch of the lower jaw-bone, without cutting the carotid artery ; and it cannot be torn away, the firm nerve being entwined with its substance ; even the casting a ligature about the root of the gland is accompanied with excruciating and maddening pain, the nature of which may be imagined from the agony which a toothache or a rheumatic affection of the temple causes. The act of tying a nerve, I am conscious, produces a kind of injury, accompanied with terrible inflammation ; this injury is permanent, and the inflammation becomes habitual. It often happens, for example, that the nerves of an amputated stump are so engaged in the cicatrix, that their extremities being superficial, and covered only with a delicate and thin cicatrix, the slightest accident irritates and inflames them ; and I have seen a stump exposed by this to paroxysms of inflammation, in which the stump swelled to the size almost of the patient's body, attended with fever, and such convulsive startings of the stump as usually occur immediately after amputation. The cutting of the portio dura, or nerve of the face, occasions the most excruciating pain, as I have already explained in the case of Captain G—— ; and I have reason to believe, that the pain proceeding from the truncated extremity of this nerve being unavoidably engaged in the cicatrix after an operation such as this, causes the return of the swelling, revives

the disease in whatever remains of the gland, and is the cause of its cancerous nature*.

“ My incisions were made in a tripod-like form ; not straight but bending, so as by their prolongation over the cheek, ear, and temple, to make a triangle, in direct lines with three corners, which being dissected away, exposed the convex part of the tumor. By giving these three incisions a circular form in the centre, I left the adhering part of the skin attached to the most diseased part of the gland ; and this centre of knobular and stony glandular substance, with thickened and adhering skin, connected firmly by the scar of the former operation, I left untouched, and cut up three flaps of thin and sound skin.

“ After dissecting back the flaps and exposing the surface of the tumor, I dissected away that part of the tumor which approached the mouth and lay upon the masseter muscle, with which it was so connected that I chose to cut away large pieces of the muscle, hardened and identified with the tumor, leaving the jaw-bone bare near its angle, rather than leave any part of the disease. Next, I turned the tumor down from the ear ; but do not imagine this was accomplished easily, as in ordinary tumors bedded in loose cellular substance ; this tumor was so firmly embraced by the fascia, and adhered so firmly to the zygoma, to the thick fascia which descends from it, and to the tendinous parts of the temporal muscle, that I was cutting through a firm, mixed, cartilaginous substance,

* This, it is to be remembered, was written at a time when the most incongruous views were held respecting the nerves.

and could not distinguish where I had got through the gland or its adhesions, but by distinguishing that I was cutting muscular flesh, or encountering a naked bone. The third part of the dissection was at once cruel and full of danger; it was the dissecting away the tumor from the cartilaginous tube of the ear, which was yet done so effectually, as to detach the tumor from the whole length of that tube, down to the temporal bone; but there, a big and firm root seemed so fixed, that I durst go no further with the knife. I had dissected the tumor backwards from the cheek, and upwards from behind the jaw-bone, and insulated it up to that point where the temporal artery transfixes the gland just before the ear; there, it will be recollected, the great internal maxillary artery divides from the temporal arteries; I could go no further; the next stroke of the knife would, in severing the gland from its root, have cut the common root of the maxillary and temporal arteries; would, in short, have truncated the carotid artery: what remained of the operation could, therefore, be done only by ligature*.

“ In this dissection I experienced all the difficulties peculiar to a second operation; for a gland which grows again after being cut, is so bound down to every subjacent part, by the scar of the skin, and by new and strong adhesions, that its connexions are of an unusual and cartilaginous firmness: and I had, in this case, to encounter the additional danger of a tumor far advanced in its progress towards the last stage of schirrus, and ready to degenerate into cancer;

* Such operations have now, unfortunately, been proved to be generally as useless as they are severe.

and it appears to me that that unfavourable change which is marked by shooting pains, consists in inflammation, is accompanied with adhesions, or to speak more truly, with a consolidation of the diseased gland, with surrounding bones and muscles, just as the schirrous breast is united solidly and in substance with the pectoral muscles and the ribs : in the present case, the fascia, descending from the zygoma over the surface of the tumor, was identified with its substance, and, when cut, was like a cartilaginous ligament, hard and thick. The dissection of the part of the tumor which lay over the jaw and masseter muscle was equally rude and imperfect ; for the tumor was equally identified with the substance of this muscle, which was, in its own substance, of a gristly hardness. The tumor, in short, adhered to the fascia of the temple, to the zygoma, to the masseter, to the jaw-bone, and to the cartilaginous tube of the ear ; from all of which, it was more or less rudely or delicately dissected ; but with such excruciating pain that Mr. S——, though a man of the most perfect composure, courage, and constancy, grew deadly pale, hiccuped, fainted, would have fallen from the chair, had he not been supported, and that so early in the operation, that even his neckcloth was not yet stained, at least, not wet with blood.

“ We were obliged to lay him down, to lave cold water on his face, to suspend the dissection for a whole quarter of an hour ; this was in the beginning of the operation, which lasted ten minutes after it was resumed.

“ The first artery which sprung was the transver-

salis faciei, but it was too small to be heeded, and it was to be cut again, wherefore I disregarded it, and it shrunk : the next artery, in dissecting the lower part of the tumor, was the labial or facial, where it turns round the angle of the jaw ; in this, as in all other dissections of the like nature, it stood out from its cellular substance so insulated, to the extent of nearly half an inch, that I found it easy, without the needle or tenaculum, to cast a ligature round it, by laying the loop of the ligature over its mouth, and drawing it : the third artery was the great temporal artery ; the manner in which it presented was not pleasant, for, first, in dissecting downwards that part of the tumor which covered the zygoma, the artery was necessarily opened : but, knowing that I had not approached any dangerous point, I clapped the point of my left forefinger on the mouth of the artery ; while grasping the body of the tumor in the hand, I continued to dissect it downwards from the temple, and to dig it away from the cartilaginous tube of the ear ; then, lifting the point of my fore-finger, the mouth of the artery appeared in the very centre of the tumor, throwing out its blood, and was tied. By dissecting the gland down from the zygoma, and from behind the angle of the jaw, I had almost touched the point where the carotid forks into the internal maxillary and temporal arteries ; to have gone further, would have been rash and unpardonable ; the next stroke of the knife would have truncated the carotid artery, and left no possible chance of saving the patient, but instant compression of the artery at that point with the thumb, and a desperate dive with the crooked needle at that part behind the angle of the

jaw, where the trunk forks into the external and internal carotid arteries.

“I wrought so successfully with my fingers, as to insulate the gland all but a trivial root ; I then pushed the flat handle of the scalpel round and round, so as to lessen that root still more : I next, with the fingers alone, passed a big and thick ligature round the root of the tumor, and tied it in a general way, and by the hold of this ligature was enabled to turn the tumor round like a button upon its stalk, and by compressing it, was enabled to feel more distinctly to the root of this slender neck. I believed, but I was mistaken, that I could drive the eyed end of my needle through this : it was of far too firm a substance for any such attempt ; but resolved any way to get at its root, I turned at last the point of the needle to this pedicle, struck it through behind the general ligature, and having thus carried a very thick waxed ligature through the root, I cut the ligature at the eye of the needle, tied two of the ends round one side of the tumor, the two others round the other side of the tumor, then crossing them, and bringing the respective ends round the opposite sides of the tumor, I tied them again ; and as this was the point necessarily including the portio dura, a great nerve of the side of the face, the drawing of the ligatures proved the most cruel part of the operation, and was accompanied with an outcry of intolerable suffering ; the cheek fell paralytic, and became instantly oblique, and I was impressed also with the conviction, that I had so pulled out the gland by the help of the general ligature from its deepest seat, betwixt the jaw and temporal bone, that I had, in tying the root of

the schirrous gland and the portio dura, tied also the carotid*.

“The gland was cut off, and only a button left with those ligatures about it: the whole operation was bloodless: at the first dressing, at the distance of four days, the whole surface was found in a state of kindly suppuration, but the ligatures, especially that which encircled the lower part of the tumor, needed to be drawn firm, which occasioned once more excruciating pain, which continued through the whole night, during which our patient was feverish and restless. On the second dressing, at the distance of seven days from the operation, I found the gland, or the remains of it, not killed by the ligature, but adhering round all its edges, to the surrounding parts; and especially I found it adhering firmly to the flap of the ear. I disengaged the adhesions with the probe, and examined the ligatures, and found them loose; but having fixed them with running knots at last dressing, I now finding it impossible to draw them tighter, took another method, viz. passing the ends of the upper ligature through the eye of a large crooked needle, and carrying it, eye foremost, round the gland, I carried the same ligature a second time

* The intelligent reader will see, on perusing the narrative of these operations, and particularly on observing what is said on cutting the branches of the fifth nerve, and the portio dura of the seventh, that the author had no idea of the distinct functions of these nerves, as discovered by me. And yet the acute pain, and the ungovernable anguish on dividing the fifth nerve, without a word of paralysis, and the paralysis the instant that the portio dura was embraced by the ligature, are important circumstances, if any doubt remained as to the facts brought forward in my papers on this subject. See the Transactions of the Royal Society for 1823-4; and the separate publication on these discoveries.—C. B.

round the neck of the tumor, and tied and drew it again with considerable pain. The button-like head and neck were now so hard and brittle, that I might safely have snipped them across, but I thought it best, since the ligature still occasioned pain, to leave it to kill the part completely. At a third dressing I found still the gland not killed, but adhering to the ear, and bleeding when touched; so that Dr. Monro could not be persuaded that the ligature actually surrounded the tumor. I drew the ligature now a fourth time with great pain; I wearied for its sloughing, as this root of the gland seemed to delay the cure, which was otherwise far advanced; but at next dressing I found the tumor hard, brittle, entirely blackened, and turning in every direction upon its narrow neck, which I twisted off with a very slight twitch, merely by turning it round and round. The surfaces suppurated fairly, and granulated; and the cheek healed evenly and well: but the pains never entirely ceased; our patient had rheumatic feelings in all that side of the head, always referable to the diseased part: they were increased in moist weather, or when the east wind blew. He retired to a delightful climate near the mouth of the Clyde, and while there, the thickening of the parts daily lessened, and I flattered myself he would entirely recover; but after receiving from our patient a succession of very afflicting letters, he returned to me in the month of January, in a very calamitous situation, with the tumor almost as big as in the month of July, when the operation was performed, and having all the aspect of a part ready to burst out into cancer. The surface and the cicatrix, and all that belonged to the skin, seemed to be particu-

larly diseased, and prone to ulceration. Three points stood particularly prominent, like knuckles, from the centre of the sore ; these were the three corner points of the skin formed by the triangular incision ; they were of a dull red colour, extremely painful, with an indistinct sense of fluctuation, or rather of bogginess (soft and hard mixed), and resembled in short the livid skin of a schirrous breast, when the operation having been unsuccessful, the part is about to burst into open cancer. The pain, which had for some months been moderate and tempered with intermissions, was now unremitting, extremely severe, shot across the cheek during the day with stunning violence, and at night was so fierce and intolerable, like the burning of live-coals, that he wished for ice to apply it to the side of his head ; and even with these large doses of opium which he had learned to use, he passed much of the night without closing his eyes. With Dr. Monro's consent, the usual, the hopeless, prescriptions of hyosciamus and mercury were given him, and he returned to the care of his surgeon at home, whose letters announced to us only a succession of sufferings daily more and more, and were terminating at last in a fatal cancer : he survived but a few months."

You perceive how entirely it is my duty to acquaint you with all possible events, with the good and the ill fortune the surgeon has to look for. Larger tumors we often extirpate safely ; looser and smaller tumors, we find it every day our duty to cut out by way of prevention ; glandular tumors, which are at once painful, and inclined to adhere to surrounding parts, are always to be suspected ; and when the character

of a tumor which is to be gathered from its consistence, forms, adhesions, the state of its surface, and the degree of pain, rather than from its size, is such as I have represented in this narrative, we should proceed to do our duty without delay; and all the regard we owe to our own reputation is by a just prognosis to warn the patient or his friends of the eventual danger of the case.

Those more ordinary operations on tumors rolling under the skin, insulated, easily extirpated, and which we know it to be our duty to dissect out, as a measure of precaution, I need not describe to you; but those in which there is any thing either singular in the place of the tumor, or critical in the dissection required, I hold it my duty to represent; and I am permitted by Mr. Dunlop, surgeon in Glasgow, to explain to you some things very singular in the operation which he found it prudent to submit to in his own person.

Mr. Dunlop, surgeon, after deliberate and frequent consultation with his father, resolved to rid himself of a continual anxiety in regard to a glandular swelling, deep seated, lying immediately under the lobe of the ear, and which had been increasing, though slowly, for five years. No well-instructed surgeon could be indifferent to the consequences of such a tumor in his own person. Had the gland been a mere scrophulous swelling, he might have waited the event patiently, of its suppurating, shrinking, or remaining stationary; but a gland, hard as a stone, gradually increasing in size, deep seated, extending its adhesions, and connecting itself with the carotid artery and portio dura, was not to be long disregarded.

Much as I have been in the habit of comparing external with the corresponding internal parts, and planning operations, there were many things in this dissection altogether unexpected, and for which I was in no shape prepared. I felt (more than even in those cases in which I had been correct in my conjectures) the necessity of thinking long before lifting the knife : I was sensible of something very uncommon and anomalous in this tumor ; for though it did not seem to adhere, it lay very deep ; though moveable, its form could not be distinguished ; though extremely hard and globular, it seemed to be covered with coats of an extraordinary and unaccountable thickness ; and, if I can pretend to remember any conjecture I made, it was a very mistaken one, viz. that the fascia, fat, and cellular substance had thickened to a singular degree over it. But Mr. Dunlop, passionately desirous of being rid of the tumor, required that I should perform the operation without delay.

The usual apparatus of knives and needles, a fork to transfix and hold the tumor with, tenaculæ and dissecting forceps, together with sponge, and a long bandage, being prepared, I began my operation by an incision carried over the centre of the tumor of three inches long, running behind the line of the jaw-bone, and parallel with it from the tip of the ear downwards ; the edges of the skin being then drawn strongly to either side, I proceeded to dissect the tumor, but after I had dissected off the fascia, the tumor seemed still soft and shapeless ; nothing like a firm gland or circumscribed tumor appeared ; what presented under my knife was flat and fleshy, and

undefined; and when this fleshy mass was pinched up betwixt the finger and thumb, the hard tumor was distinguished under it: I now recollected that I was cutting directly over that part of the parotid gland which lies behind the angle of the jaw, and as instantly distinguished that the surface I had laid bare was no other than the flat white granulated substance of the gland. I perceived that the tumor, the object of my operation, lay under the parotid: I first dissected round this lobe of the parotid on each side, then turned off the lap of the parotid, or that lobe which lies behind and under the ear, and then saw the indurated gland lying beneath it.

This was assuredly a delicate piece of dissection; for first the lobe of the parotid was turned back and carried behind the angle of the jaw, at that point where the division of the external carotid enters into its substance. Under the gland lay the trunk of the carotid, and the space was far from being free for making so dangerous a dissection confidently: there was no want of courage on the part of my patient, but it was somewhat of an obstreperous and boisterous kind; for having imagined the tumor a simple and moveable one, to be cut or dug, or torn out easily and quickly; he was provoked at my tedious way of dissecting, and called for a mirror to inspect, if not to direct my incisions. The gland itself was now laid bare with its glistening bluish capsule of cellular substance, and while the lobe of the parotid was held up by my assistant, I dissected cautiously and slowly into the angle, to separate the tumor from its connexions. In the accompanying sketch, No. 42, made instantly after the dissection, the sides of the incision



Drawn by J. Bell.

Engraved by E. Mitchell.

are marked (a a), the parotid gland held upwards by a hook struck through the fascia is marked (b), the tumor lurking under it, and entirely enveloped in it, (for it is flat and cushion-like), is marked (c). The operation lasted long, and was not a very tranquil one: but it was safe, and by making the incision merely longitudinal, without any cross incision, and immediately under the whisker, and by pinning it nicely and delicately with fine sewing needles, and laying slips of court plaster curiously betwixt each needle, the adhesion was accomplished in a few days, with only a very slight leaking of pure saliva from the wounded surface of the gland, which lasted but two days, and in eight days my friend was well and had returned home: it is by his express permission I lay this slight sketch of the dissection before you.

Slight as these difficulties may appear in this narrative, it is fit you be aware of them; for the young surgeon, in the moment of seeing something altogether unexpected, a flat and shapeless mass, in place of a firm circumscribed gland, is in danger of losing courage, and falling into confusion. I hope I need not remind you how unpleasant an accident it would have proved, had a young and thoughtless operator in these circumstances proceeded rashly, and cut across the parotid, mistaking it for the tumor, or cut at a venture, down into the angle where the carotid and portio dura lie*. It is just such a tumor as

* The sketch of this dissection explains the difficulty and delicacy of it. The lobe of the ear is marked (a); it was from the hollow betwixt the ear, the angle of the jaw, and the vertebræ, that hollow where the carotid arteries lie, that the tumor was dissected. In order to avoid deformity, I had made the incision longitudinal only, and not very long, no more than three inches; (b) marks the lower

this, that by adhesion and induration affects all the surrounding parts, becomes too formidably connected to be extirpated, and at last, by causing cancer and destruction of the bones, and by its enormous size, lays the patient's head upon the pillow, from which it is never to be raised again. I once saw, just from so slight a beginning, a boy with an osteo-sarcomatous tumor of the head, where bones, muscles, and glands, were all massed in one common tumor, big as the original head, of a weight too great for the neck to raise, and which, when it was to be moved, was moved with the help of both hands; the lad died of stupor and apoplexy, from suppuration of the brain.

JANE SHARP, AGED 27.

M. J. BELL.

Jan. 15.—About twelve years ago, without any evident cause, she observed a small, very painful tumor forming immediately under the right ear, which gradually increased for four years, until it had arrived at the size of a large goose's egg, rising up anterior to the ear. At this time she had it cut out:

lobe of the parotid gland, which in its natural situation extends almost to the angle of the jaw, and which in this case entirely involved the schirrous gland; but at (b) the parotid was dissected from the surface of the gland, turned upwards and held aside by the hook, till the gland (c) was dissected out from beneath it. The whole appearance of the parts was in this case like that of a dissected hernia, the fascia of the gland (d) resembled in some degree that of the herniary sac; the parotid resembled a thickened omentum, which being turned aside exposed the gland, as the laying aside of the omentum in operating for hernia shows the turn of the incarcerated intestine.

during the operation, she lost a considerable quantity of blood, and suffered great pain; since which she has been unable to move the muscles of that side of the face, which is paralysed, in consequence of the division of the portio dura, or facial nerve. About a year after, the tumor began again to form, accompanied occasionally by lancing pains; since which time it has increased gradually. It is at present about the size of a large hen's egg, hard, unequal on its surface, quite colourless, and at times accompanied by stinging pains. It extends considerably behind the jaw, and on the anterior part of it is seen the cicatrix from the former operation.

Jan. 17.—A tolerable night's rest, no hæmorrhagy; but she complains of pain in the throat and difficult deglutition.

Jan. 18.—She complains to-day of difficulty of breathing; the pain of the throat continues; the bandage being slackened, there is immediate relief to both: she sleeps ill; opium is substituted for the draught.

Jan. 19.—The sponges adhere firmly to the surface of the wound: there is little tension or inflammation of the parts, but she still complains of the pain in the throat, chiefly on deglutition.

Jan. 20.—Two of the sponges were removed with little difficulty or pain; no hæmorrhagy. The wound is filled up with lint.

Jan. 22.—All the sponge is removed.

Jan. 25.—The discharge is copious.

Feb. 4.—The cavity fills up rapidly.

Feb. 15.—She continues to do well.

Feb. 25.—She was dismissed nearly well.

REPORT OF THE OPERATION BY MR. BELL.

Jan. 16.—The one half of the parotid gland, that which lies behind the angle of the jaw, had been left: the scar of the former operation was on the fore-part of the tumor: the tumor lay behind and under the ear, pressing deep betwixt the mastoid process and the rising branch of the jaw bone. It seemed outwardly a small tumor, but it had shot down very deep, adhering to the pteregoid process and to the back of the pharynx. The dangers of the operation were these: the portio dura, the ninth pair of nerves, passed through the tumor: immediately under it lay the trunk of the carotid. The external carotid behind the lower jaw, but chiefly the large jugular vein, was in danger, for the tumor lay so entirely under the mastoid muscle, that part of the muscle is taken away with the gland. The gland being dissected free in its lower part, where it lay near the carotid artery, was torn up from the roots where it adhered to the back of the fauces. The internal maxillary artery bled very profusely; a small piece of sponge, the size of the thumb, and supported by other pieces of sponge filling up all the hollow, was pressed upon the artery at the back of the nostril. The swelling of this piece of sponge caused a difficulty of deglutition, which ceased when the sponge was removed. After the operation I put my finger into the hollow whence the gland was extracted, which I felt to be two inches and a half deep—at its lower angle (*i. e.*) behind the corner of the jaw-bone, the carotid lay bare, beating strongly, not dilated;

the upper part of the wound was deep, so that the finger touched the pteregoid process forwards, and the apophysis cuniformis of the occiput backwards; and when she swallowed, the morsel, in passing down the pharynx, pressed upon the point of the finger.

When it happens that a glandular swelling, small in its first stage, and but too little formidable to excite alarm, grows in its second stage to such magnitude as plainly to require extirpation, which the surgeon, even after he has begun the operation, dare not complete; when the same unhappy person presents himself again, claims the assistance of the surgeon, willingly offers to subject himself to any operation, however severe or cruel, but is by a formal consultation rejected, and bereaved of all hope of relief, is not the doctrine explained in my preliminary observations but too certainly proved? In this sense, I venture to call your attention in a particular manner to the case which I am now to relate, and to the reflections which occurred to me on this consultation.

“Jenny Brown was a poor solitary thing, who worked laboriously to maintain her aged mother, her father being some years dead: she slaved at all kinds of work as an out servant in a farm-yard. After churning milk, being exceedingly heated, she went out with her cap loose, and jaws exposed, and by carrying bundles of wet grass for the cows upon her head, had a severe toothache, for which a tooth was pulled, and still continuing the same labour, she got cold; thence arose a kernel-like swelling of a gland under the lower jaw near the gum of the corrupted

tooth. Her face was swelled, so that her eyes were closed; the lump grew as big as a hen's egg, with severe pain; the swelling of the face subsided, the pain ceased, but the glandular tumor remained. Such was the slight beginning of the disease represented in this drawing; it is but too usual to say, "there is only a swelled gland," to believe that its swelling will subside spontaneously, to be careless though it continue to grow; but when the patient who has disappeared for many months, returns with a swelling, the final event of which is no longer doubtful, the surgeon must feel very poignantly the fault he has been guilty of."

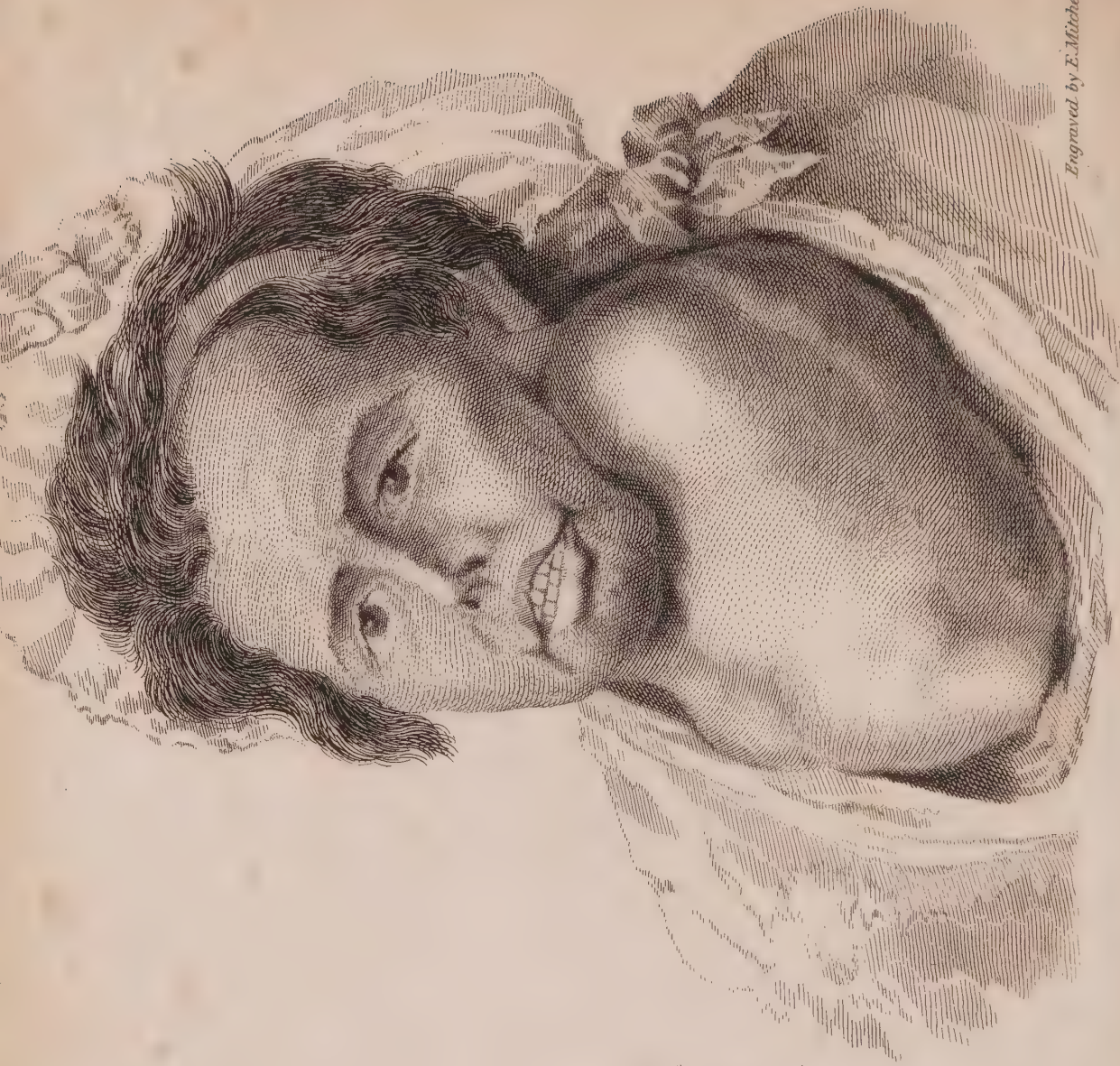
Whenever an operation is ill concerted; when the surgeon proceeds to extirpate a tumor with this vulgar notion in his head, "we shall try to take it away," he is almost sure to fail: accidents, no doubt, will prevent the most dexterous surgeon from accomplishing all his purpose, and a zealous man will sometimes attempt what he dare hardly perform; but a surgeon really acquainted with the uncertainties and difficulties of his profession will, even in the least dangerous circumstances, reflect long and much on the nature of the tumor which he is to extirpate, and the anatomy of the adjacent parts: he will try to decide whether the tumor lies without or within the fascia of the platysma myoides muscle; whether it consists of various smaller glands, or of one only; whether it has its arteries from one point or stem, so that it could be dissected round and insulated, this point being left to the last entire, or from various sources, so as to make a slow and bloody operation necessary; whether these arteries must be cut near

to their going off from the carotid; whether the carotid itself, or its immediate branches, may not be entangled in the roots of the tumor. Such calculations I will venture to say never entered into the mind of the operator, who first adventured to extirpate this tumor: he entered upon it with little premeditation, and stopped short at the first slight appearance of danger.

To extirpate any tumor safely, you must keep to its surface; dissect cellular substance only; never touch, if possible, its system of vessels; if once you plunge into its centre, you are inundated with blood (unless it be merely a steatoma), and your future dissection is irregular and imperfect. The first sketch, No. 43, shows the size and form of the tumor, at the time the ill advised operation I speak of was attempted; a very long incision being made, the operator seemed to me to plunge into the very heart of the tumor; several arteries (not, it is manifest, of very dangerous size, for he had never even approached the roots of the tumor) threw out blood: all the assistants thrust in their fingers to stem the blood, and the operator taking advantage of this consternation, little confident in himself, and having calculated no circumstance beforehand, obtained an easy and unanimous vote, that the incision should be sewed up. This was to me manifestly the result of an imperfect knowledge of the root and size of the several arteries, of the error of cutting towards the centre of a tumor, and of the worst of all faults and weaknesses, that of turning round with fear and trepidation, in the midst of occasional difficulties, to consult those, who from the moment an operation is

begun, should be no more than spectators. It proceeds from a paltry desire to make the attendant surgeons parties, not to the general operation, for which they have given their voice, but to each step of it. Let the surgeon act from himself, according to the best of his judgment, cut slowly when he is conscious of approaching too near the great vessels, and stop when alarmed by that immediate sense of danger, of which he must be the sole judge, or at least the most competent.

One advantage this poor creature derived from this unsuccessful operation, viz. the relief from pain, for she was relieved by the loss of blood, insomuch that she recovered her health, and, in some degree, her strength, and returned to work, for the support of her old mother; at least she could spin. For a long while she has been unequal even to this; she has lingered and wasted in a very helpless condition, and is now in a state of extreme weakness for want of food: she walks but a few paces without stopping for want of breath; her swallowing is difficult; she has great pain night and day from the mere distension and size (I am persuaded) of the tumor, which is not reddened in the very slightest degree: the weight of the tumor is intolerable, and it appears to me that, in not many weeks, at the utmost in a few months, she must be released from her sufferings. She has saved one shilling to enable her to travel to town, from the village she lives in (Falkirk), which is about twenty miles distant; and now, from the first and unsuccessful operation, she presents herself, after no great lapse of time, with a tumor so enormous, as to make the question of operation difficult to resolve,



Engraved by E. Mitchell.

JENNY BROWN. p. 286.



Drawn by J. Bell.

JENNY BROWN.

but in a condition which admits no delay : she is sure to die, and willing to suffer any thing which may tend to save her life : there is one inducement to comply with her request, viz. that she must surely die, though from no other cause than the bulk of the tumor : the tumor not being cancerous, leaves us nothing to dread after operation.

A consultation has decided that no operation can be performed. I imagine there are very many safe and easy ways by which this tumor, great as it is, may be extirpated, or destroyed : perhaps there are few parts of the body in which the course of the arteries, and the connexions of a tumor, can be so certainly calculated ; surely there is none where this might be done so accurately as at the angle of the jaw ; and, reflecting upon the possible success of such an attempt, I think I have estimated the dangers fairly, and as impartial as if the operation were my own appointed task.

This poor creature's difficulty of breathing seems to me to proceed as much from the weight of the tumor, as from the hold it has upon the parts ; from the immense mass resting upon the trachea and oppressing even the breast. The second drawing represents that constricted state of the features, produced not by the agony of an asthma, but the oppression of unceasing difficulty of breathing. The tumor has every character of what is usually called a wen ; the whole mass incredibly hardy in proportion to its bulk, so that she supports it continually with a sling round the head and neck : it is extremely firm, not very vascular throughout its substance, but receiving its arteries at particular points ; it has no

great veins running over its surface, whence it may be presumed that it has no very irritated circulation, nor any thing of a cancerous nature. The whole surface of the skin is healthy and free from redness or any blemish, except where the scar of the former operation passes obliquely over it: it is plainly glandular, the most prominent parts indeed consisting of individual glands: two large distinct prominences, lying one before and another behind the ear, form the chief bulk of the tumor at that part, and are plainly separate glands, moveable both in relation to each other and to the main tumor. The extirpation of that part which lies under the chin could give us no concern; there we could cut no arteries but the facial, which would be divided in separating the tumor from the line of the lower jaw: its own weight seems to have lengthened its roots, and drawn it down from under the ear, and from the angle of the jaw: it hangs so that I can push the points of my fingers deep behind it, without feeling any strong adhesion, and, I am confident, it has no dangerous connexion with the carotid at that critical point, where it forks behind the jaw-bone into the external and internal carotids. I am confident that the aorta and great jugular vein lie together safe in their sheath, while the tumor lying external to the sheath, might be dissected away from it, from the mastoid muscle, and from the vessels beneath quite safely, as we often find immense tumors of the thigh (equal almost in size to the patient's body) are dissected from under the sartorius muscle, without harming the femoral artery. The worst effect of the tumor, and the most dangerous adhesions of it, are to the

side of the throat, to the os hyoides and its muscles : there, by pulling down the os hyoides, it makes the swallowing difficult, and oppresses the breathing by its weight ; and at that point there might be infinite trouble from arteries proceeding into the body of the tumor from those of the thyroid gland. But the tumor is, by its weight, dragged so away from the jaw, and admits the points of all the fingers, ranged in a line, so deep on all sides, that, though I foresee much difficulty, I find no absolute danger in the attempt. Yet it must be done by one who goes not to work with the general and confused notion, of extirpating the tumor “as circumstances will admit,” and proceeding according to the best of his judgment. His judgment must be decided and designs matured before he begin ; he must calculate at what points the arteries enter ; what the probable size of those that come from under the chin, from the lingual arteries ; what the size of these derived to it from the facial, where it crosses the angle of the jaw ; what the size and probable direction of those coming to it from the occipital, or temporal branches of the carotid ; or those deep ones coming from the thyroid arteries ; he must resolve in what succession to cut them, and with what precautions. The surgeon, who sees an artery throw out blood furiously, and in the neck too, not knowing from what root it comes, must instantly fall into great confusion : but if he has calculated every probable danger, he is prepared, and his patient comparatively safe. In the present case, the incision should be made, not over the centre of the tumor ; the purpose of saving all the skin which invests it is absurd, and the concep-

tion of dissecting into its substance extremely ignorant. The oval incisions should be made to encircle its upper and lower parts ; there are points in which it should be opened freely,—as there the chief dissections are to be performed. The great and dangerous dissection would be in the line of the lower jaw, about three inches from it, and extending from behind the ear to the throat : the skin being laid back, this dissection would follow the convex of the tumor ; the tumor falling by its weight would widen the incision and expose the parts ; the left hand laid upon it would press it down, while the assistant retracted the skin ; the fore-finger of the left hand would guide the dissection ; the point of it, fixed upon each lesser artery successively as it bled, would stop it till it shrunk : the form of the tumor, the line of incision, and the direction of the jaw-bone, would keep the relation of parts distinct : the operator would certainly know when he approached any dangerous point. In drawing down the tumor, and dissecting it from under the chin, he would cut branches of the lingual arteries ; pressing the tumor next down from the angle of the jaw, he would cut the facial artery ; and would go no further in that direction. Having tied the facial artery, he would next, in tearing away the tumor from under the ear, divide branches of the occipital and temporal arteries : it is the seeing those arteries bleed furiously in succession, without foresight, without knowing from what trunks, in what directions they come, or knowing what may next happen, that makes an operation seem bloody and dangerous.

In next dissecting deep into the angle or cavity

below the jaw, there must be danger ; every incision must be made with caution ; the point of the fore finger must go before to feel for the beating of the carotid artery ; and much should be done now by laceration, the tumor being inclined first from the chin backwards, then from the occiput forwards, and pulled so as to give a distinct feeling of the parts with which it is connected, whether, for example, pulling upon the tumor moves the os hyoides fairly along with it, whether the tumor sends down roots, involving the carotid and internal jugular vein. This deliberate and daring proceeding would, I doubt not, enable the surgeon to approach, by dissection or laceration, quite close to the only dangerous point, viz. that where the carotid lies under the angle of the jaw ; if, having reached that point, he found a clear and distinct cellular substance to lead him in his dissection, he would, pressing aside the dangerous parts with his finger, continue it with equal deliberation through its next stage ; if he found inextricable adhesion, and increasing hæmorrhagy, he would stop ; but, having so far insulated the tumor, he could, if forced to stop, tie its root, even though several inches thick, and strangle it, if not with a surgical ligature, at least with a coarser string.

I should not, in the slightest degree, shrink from such an operation, and would dissect so very large a tumor with less reluctance than many a smaller one I have dealt with. I have even a persuasion, that this second stage of growth may be accompanied with circumstances favourable to the operation, the weight of the tumor elongating its roots, weakening its adhesions, and concentrating its arteries. I beg

leave to remind you of another circumstance in such an operation, which you will do well to attend to. Do not dissect in haste and flurry, for by time and circumspection you can accomplish things which seem impossible, and I would explain my opinion and my practice more fully thus:—"Would there be much danger had you to deal at once with one only of all the arteries which are cut in a tumor?" None assuredly.—"Would there be much additional danger, were the pain of this dissection extended from a quarter of an hour to an hour?" None.—"Have you not seen a presumptuous ignorant creature, after ill-directed and insufficient incisions for lithotomy, grope in a patient's bladder for a stone, which, perhaps, did not exist? or among the viscera, where it could not be found, for a full hour by the watch, without the patient's dying?" This I have seen very often, and can tell where, at this moment, from month to month, such scenes are exhibited for the instruction of pupils in surgery. Let us apply this reasoning to the case before us. I have uniformly found, that permitting the blood to stop entirely, and the incisions to become dry before binding up a wound, contributes to its speedy adhesion; in all operations I wait long; this is with me one universal rule in operating. I have as uniformly found, that when a dissection became perplexed and confused, the taking up of the larger vessels, and allowing the bleeding from lesser ones to cease, and waiting till the surfaces get that raw look which betokens the drying up of the blood, explains every thing, and restores that clear conception which I had at first of the relation of parts, of the arteries I have actually cut and tied,

and of those which are still endangered ; and this I regard as a rule in all difficult operations. In dissecting this tumor, or such a one, I am convinced that the danger might be brought within very narrow limits, and am confident that in the present instance, even the lower lobe of the parotid gland, as well as the sheath containing the carotid artery and internal jugular vein, lie under and behind the tumor ; in short, that the gland lies betwixt the tumor and the artery, and defends it.

But are there not various ways, independent of direct incision, for working out or weakening the roots and adhesion of this, or even of a more formidable tumor ? May not a greater enterprise than this be achieved by partial incisions, by ligatures, or by both combined ? The two great globular knots which form the upper part of the tumor, and project before and behind the ear, are, I am persuaded, so insulated, that they might be dissected away by one operation, reserving the great mass of the tumor for a second ; or the operator might go as far as he safely could by direct incision, and then striking a long needle, like those with which I have been accustomed to transfix large strumous sacs, pass a ligature through the tumor to be tied on either side of it. Or the tumor, I am persuaded, might be so pulled away from the throat, and the long and crooked needle I speak of passed so cunningly round and under the tumor, as to pass the ligature round it without any preparatory incision. It is possible to penetrate so into the body of the tumor with caustic, as to pass a ligature through its centre, and after extirpating the chief mass by stricture, to destroy the roots by a continued use of the

caustic. It is possible, without penetrating into its centre, to dissect up one side, or to pass the long needle obliquely through one side, so as to give a hold to the ligature, make it embrace the neck of the tumor, and by twisting it with a tourniquet (made by twisting a stitch in the ligature, and slipping a piece of pasteboard under the knot) from day to day, mortify and extirpate the whole mass*.

* My reader, unless he be a practical surgeon, will not readily feel the reason of my enumerating thus the many resources which will present themselves, nor the sad necessity of having recourse to so many means. What dangers in the way of operation, what continued tortures by any slower and less dangerous method, will not a man undergo to save life? This poor creature probably died, as thousands have died, in a state of protracted suffering; and the surgeon who has witnessed such a scene, who has felt compunction at having lightly dismissed a patient in the early stage of a tumor which has afterwards proved fatal, or who has felt the difficulty of deciding when a tumor was plainly to prove fatal, but yet too deeply connected to allow of extirpation, will think over all the possible resources with sincere interest. That those of my readers who have not in practice had opportunities of witnessing the last scene of this tragedy may know what such a tumor, a mere fatty or glandular tumor, will come to, I transcribe the following case:—

Mr. Samuel Lockhart committed to writing the following case of John Anderson, a disbanded soldier, in the sixtieth year of his age.

“About thirty years ago, there appeared on the right side of the neck a tumor about the size of a walnut, after receiving a kick from a horse when in the army. For the following ten years after the accident, its increase was very imperceptible, and he found very little inconvenience from it; but after this it began to grow larger, so that, at the end of the next ten years, it had got to the size of the fist. It now became very inconvenient to him from its size, for he never had any very acute pain in it. Being visibly increasing, he became very anxious to have it removed; he therefore applied for a consultation of the medical gentlemen, first at London, then in Ireland, and last of all at Edinburgh; but in all these places, he was told it would be a very dangerous operation, on account of its situation with respect to the large vessels and nerves of the neck.

But there is no need for subterfuges in a plain and simple piece of dissection, which though not without danger, is vindicated by the suffocating condition of the patient, and by the inevitable nature of that death

“ He was now, from the size of the tumor, forced to quit the service. Ever since it has been very sensibly increasing, though slowly ; but, within these last six years of his life, it has grown more rapidly, and at present is of a most enormous size, extending from the clavicle up to his ear, and stretching a considerable way over to the left side of the neck, both before and behind. At first, the skin was stretched equally and smoothly throughout the tumor, but within the last-mentioned period it has become very irregular, and there are several very large risings and depressions on its surface. It has now become so inconvenient and troublesome to him, as to render respiration and deglutition difficult, and the motion of his under jaw is very obscure. He cannot articulate plainly ; he was naturally a thin man, but very active, and enjoyed a very good state of health previous to the accident ; but since which, he has been a good deal troubled with dyspeptic complaints. His sleep has, some time past, been a good deal impaired. He is much emaciated, and his voice is very feeble. Said, he rather heard with difficulty in the right ear. Within these eight days, the tumor has ulcerated on the back part, the edges of which appear gangrenous ; and there are several black spots on that side of the tumor. The discharge from the ulcer is very foetid, copious, and of a dark colour.

“ On the 6th of April, a violent hæmorrhagy broke out from the ulcer, to the amount of a pound or two, but was stopped by the application of cloths dipped in cold water and vinegar. The hæmorrhagy recurred again on the 7th, to a still greater quantity, and was stopped as in the former. No more hæmorrhagy occurred until early in the morning of the 10th, when every thing was tried in vain to stop it, and he died about seven o'clock the same morning. He had another tumor, of the size of an egg, stretched over the coronal suture, of the atheromatous kind. He had used a variety of remedies without benefit, the composition of which he did not know.

“ **DISSECTION.** On cutting the teguments over the tumor, they were found preternaturally thickened in several places ; and immediately beneath, we found the platysma myoides in the same state. On laying open the tumor, we found it principally composed of fat, which in several places was hardened ; and, dispersed amongst the fat, we found several pretty large cysts, containing a very foetid matter, of the consistence and colour of linseed oil. On examining the root of the tumor, we found it adhering by a cellular substance

which awaits him,—an operation which, though not absolutely safe, is so in the hands of a dexterous surgeon : witness the following most interesting case. “The most considerable tumor seated in so dangerous a part as the neck, which I have ever in my life extirpated,” says M. Petit, “occupied all the side of the face, neck, and jaws ; it was almost entirely circular, extended from around the ear, both before and behind, upwards to the angle of the eye, forwards to the corner of the mouth, and downwards over the jaw, along the neck, to the articulation of the clavicle with the acromion process. It was seemingly eight inches in diameter, and the patient, about fifty years of age, had carried it twenty years ; for it was of slow growth, its first beginning being a glandular induration, seated about two inches under the ear, and lying on the mastoid muscle.

“When this tumor was no bigger than the fist, I advised him, and often repeated the advice, that he should have it extirpated ; when he refused, I prescribed such discutient remedies as I imagined might have some effect ; and every time I repeated my advice, he rejected it entirely, because he could still conceal the tumor under a voluminous peruke, such as was then in fashion : but the tumor increasing in

to the trunk of the carotid artery, the whole way ; the muscles so pressed away, as to turn the face towards the left shoulder. The trachea was pushed over to the left side. The right side of the under jaw was so twisted, that the flat side of it turned towards the tumor, and the teeth lay horizontally in the mouth. Both salivary and lymphatic glands were found perfectly sound. Nothing else occurred on dissection. We observed, on the surface of the tumor, some very beautiful ramifications of veins, in a varicose state.

“The tumor weighed thirty pounds.”

bulk, so as no longer to be concealed, and growing so painful as to excite alarm, he convoked a number of surgeons, to have their advice. I alone, of all the gentlemen consulted, advised the extirpation of this tumor ; each of us, as the consultation was not held in the presence of the patient, spoke his mind freely, and when it came to my turn, I explained myself thus :—‘ Of all the reasons, gentlemen, which you have advanced against the operation, one only affects me, and that is the fear of hæmorrhagy from the numerous arteries of this tumor, which not having one root or pedicle, would bleed at once from all points ; and from the number of its arteries, some most likely of considerable size, the patient might lose much blood, perhaps his life. These, said I, are the dangers, but have I not skilful assistants willing to stand by me ? What, then, should I fear ? I shall cut away the skin along with the tumor which it covers, because they adhere ; I shall first dissect away the part that lies over the cheek, and some one of you appointed for that duty shall be ready to clap a finger on the first artery I cut ; and as I proceed in my dissection, he will have a finger ready for each artery that springs. Thus shall I pursue my operation, and whatever number of arteries are cut, so many fingers will there be ready to compress them ; and the whole being accomplished, finger after finger being raised, first from the greater arteries, and next from the smaller, each in succession will be secured with the needle and ligature.’ The scheme was acceptable to all of them. It was deferred only till the following day, and never was project better fulfilled, for never perhaps had a young surgeon so many

of his masters in surgery to support him. Arnould, Tribauld, and the elder Le Dran, held their fingers on the arteries. The smaller ones of the eye-lids, lips, &c. were considerably dilated; but those which occasioned the most trouble were the anterior and posterior branches of the temporal artery, and the facial where it turns round the lower jaw. Each ligature held its place; at the first dressing, not a drop of blood flowed: in two months, or little more, the wound was cicatrized*.”

You will observe, that M. Petit's confidence in undertaking an operation so formidable arose from a conviction of the tumor being superficial; not under the mastoid muscle, but above it; not connected with the carotid artery, but endangering only the temporal and facial branches. But the question is a very awful and serious one, when the tumor is seated beneath the mastoid muscle, projecting from under it in consequence of its great size, and probably connected at its root with the sheath which includes the carotid artery and great jugular vein: such a tumor, if firm, glandular, growing rapidly, and pressed inwards by the perpetual bracing of the mastoid muscle, will connect itself so with the parts beneath by adhesion, as to make its extirpation dangerous in the last degree; and it will, at the same time, press so upon the throat, as to make the attempt an act of necessity and duty. Often I have had occasion to consider the anatomy of this part of the neck, and especially of the vessels and nerves lying in the angle under the jaw-bone, but never more anxiously than when

* *Ouvrage Posthume de J. L. Petit.*

preparing for the following operation. The subject of it was a gentleman about thirty-five years of age, of the best and most grateful dispositions, and the stoutest heart. He confidently required me, on my allegiance and duty, to perform the operation if I found it at all consistent with safety, although it had been forbidden in many former consultations with other surgeons : his courage was not in words only, while I performed a very painful and slow dissection, he sat like a monument. The tumor projected from under the ear, of a stony hardness, and of such a bulk as to fill up all the angle betwixt the ear, jaw-bone, and neck : it extended backwards behind the ear three inches, forwards to the chin, and downwards along half the neck ; it already displaced the larynx and throat, pressing them over towards the left side ; and made the swallowing difficult, and the breathing so laborious, that he could no longer sleep at night, but started out of bed, partly from suffocation, partly from fear ; it increased, withal, very rapidly in size. The sum of the opinion which I delivered to him in writing was this :—“ That a tumor so situated could not cease to grow, and could not fail to produce, at no very distant period, the most distressing consequences : that, upon comparing the tumor with the great vessels and nerves of the neck, it was my persuasion, that though it lay upon the great carotid artery and jugular vein, it had no essential connexion with them ; and that the only arteries which would be unavoidably cut, were the temporal, occipital, and facial arteries : that the carotid, with its accompanying vein and nerve, were involved in their own peculiar sheath ; that the angle where the great carotid

branches into the thyroid, facial, occipital, and temporal branches, was protected by the mastoid muscle, and by their sheaths of cellular substance: that I thence inferred, that though no such operation can be void of danger, there was, in the present case, nothing to deter the surgeon from attempting so needful a duty; that I should with pleasure assist at this operation, or with equal alacrity perform it; but that I conceived it a necessary privilege, that the surgeon who made himself responsible for the life of a patient, should be entitled in all irregular operations, especially in one so full of danger as this, to stop at the first apprehension of danger."

The history of every tumor must be alike; and I found in the history of this particular tumor nothing interesting. Were I inclined to draw any inference from what my patient told me of the origin and growth of this tumor, or from the severe and dangerous operation he was forced to submit to, it would be that so strongly enforced in my Preliminary Discourse, viz. That no tumor, when it passes the usual limits of a swelled gland, and begins to adhere to the surrounding parts, should be permitted to grow; for this, too, like that of Jenny Brown, was but a swelled gland. The description of every dangerous tumor is delivered by the patient in the same phrase, "It began like a little knot or kernel, and grew slowly." It will, I am persuaded, be infinitely more acceptable to you, if, in place of the insipid and trivial details of the beginning and slow growth of this tumor, I lay before you those plans of the arteries and veins which I schemed for my own use, before entering upon the operation; they will give you at once the correctest



Drawn by J. Bell.

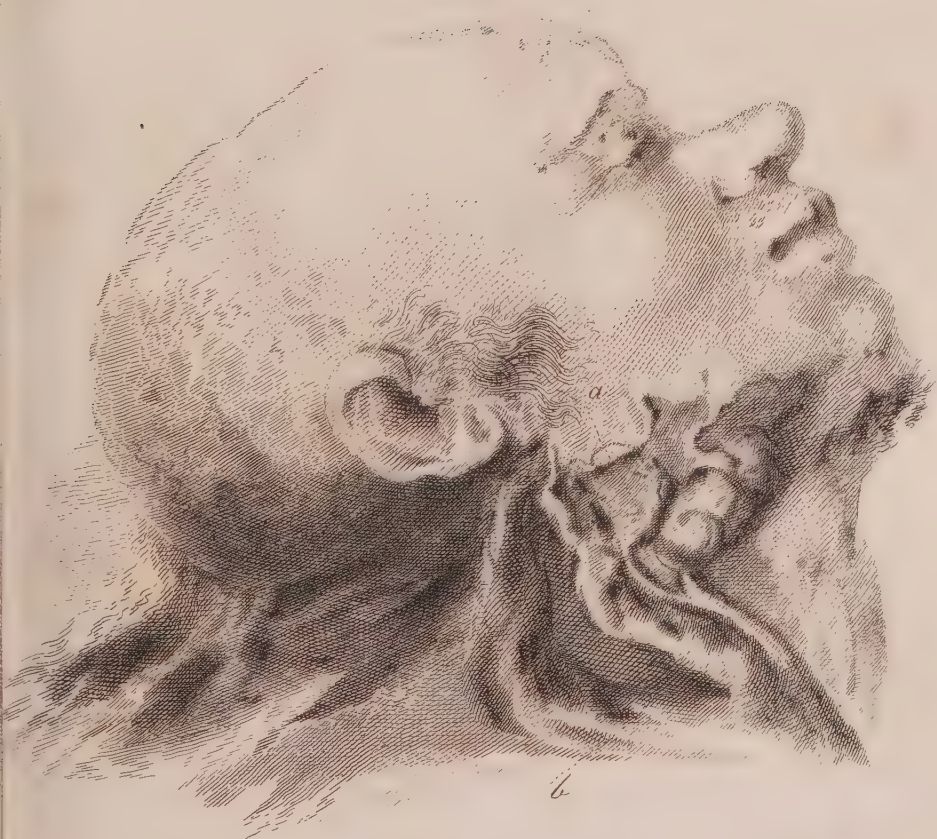
Engraved by E. M. W.

notions of the external form and size, as well as of the internal relations of this tumor.

My first desire, on all occasions of danger, is to make just conjectures in regard to the internal relations and probable adhesions of the tumor ; and on these to found a true prognosis, to be delivered to the patient, or his friends, and a rational scheme of the several parts and steps of my intended operation. First, as is represented in the plan, No. 45, I found the tumor of very formidable dimensions, projecting to the perpendicular height of four inches, and terminating in an apex, which stood as prominent from under the ear, as the chin from the face and throat ; and this pointed apex was the smallest part of the tumor, which increased in bigness towards its base, and there, especially in the part lying under the mastoid muscle, though it was moveable, because the muscular parts of the neck are moveable, it seemed solidly connected with the parts beneath it. Secondly, though that never could be regarded as a superficial tumor, which lay, in its biggest part, under the belly of the mastoid muscle ; yet I found no motive for despair, for I was, by every calculation, persuaded it had no very intimate relation to the more important vessels, but stood thus connected :—It lay so close upon the carotid artery, where it is represented by the dotted line (a), that it entirely covered that very dangerous point (b), behind the angle of the jaw, where the carotid forks into the great branches destined to the thyroid gland, tongue, face, and temple ; that it lay closer still upon the root of the occipital artery (c), and covered the whole length of the facial artery (d) ; but, though deep in respect of the mas-

toid muscle, and firmly compressed by it, it was superficial in respect of the carotid artery, for the angle where it forks into its great branches is covered, as is represented in No. 46, by the styloid process, and the muscles arising from it; and is even bound down and protected by them, the artery being marked (a), and stylohyoideus and styloglossus muscles being marked (b c): the great carotid, the jugular vein, and the eighth pair were not only thus protected by the styloid process and muscles, but are farther involved in their peculiar sheath of fascia. It thus seemed to me less dangerous to extirpate even this great tumor, than the smaller one of Jean Sharp, seated as it was deep behind the ear, where the carotid artery lies; but yet the degree of security, arising from this interposition of the styloid process, betwixt the angle of the carotid, and the body of the tumor, only rendered the operation possible, not safe. There were other manifest dangers to be encountered; the tumor passed under the mastoid muscle, and was so connected with its inner surface as to require that muscle to be turned entirely backwards in dissecting the tumor from beneath it; the tumor could not, without a degree of danger, be detached from the side of the throat, where, as it seemed to me, the carotid, the temporal, and occipital arteries, could hardly escape, and where the inosculations of the external jugular vein (a), No. 47, with the great internal jugular (b), would not fail to be cut across so as to cause, if not a dangerous, at least a very perplexing hæmorrhagy.

With these conceptions I formed that plan for the operation which succeeded so far as to carry me to the very roots of the tumor, and save my patient from



very imminent danger. First, I resolved to have full room for such a dissection, and to carry the external incision obliquely across the neck, in the direction of its natural wrinkle, following, in some degree, the edge of the mastoid muscle, beginning the incision on the occiput three inches above and behind the ear, and ending four inches below the chin. Secondly, to dissect up the skin largely and widely, and turning it back, proceed to dissect up the mastoid muscle from the tumor. Thirdly, to dissect away the tumor from the lower and lesser point (e), No. 45, where it projected from under the mastoid muscle backwards, but not far; and to dissect it next down from the ear and from the chin, towards the place of the carotid artery. Fourthly, the tumor and the mastoid muscle being moveable in respect of each other, in place of merely raising up the tumor gently from under the mastoid, with the design of dissecting, resolved to poise it up strongly, in the intention of tearing it away from its adhesion, and gouging it out with my fingers. I perceived that using my knife here, though it might not much endanger the carotid, would wound its branches close to the trunk. I considered laceration as the true principle of our proceeding in all such dangerous points; and the thrusting in a piece of sponge as the best means of suppressing any occasional hæmorrhagy. I have gouged out tumors with the fingers “*more laniario*,” which I should never have dared to attempt with the knife.

From this plan of operation I confidently expected that there would be no other hæmorrhagy than from the general wound, viz. blood oozing out slowly from the cut surfaces, as menstruation does from the sur-

face of the womb ; unless it were that sudden gush of blood which flows from the jugular veins when cut across, but which will cease instantly, and will be distinguished by its black colour and by the want of pulsation, so as not to create even a momentary alarm.

This plan I put in execution with great success, and it rests upon my own mind as a conspicuous instance of an operation performed in very inauspicious circumstances, without spilling, I may say, one drop of blood, where it seemed difficult to escape wounding even the greatest arteries : his shirt was hardly moistened, and I had no other cause of alarm, than feeling with the point of my finger the great arteries beating. First, the outward incision of fully eight inches long, being carried round the neck and over the apex of the tumor, the mastoid muscle was dissected away from the body of it, and so entirely insulated, that my assistant taking it on his fingers, turned it before or behind the tumor, according to the part that I meant to dissect ; and thus I dissected sometimes before, and sometimes behind the mastoid muscle. In this dissection, the platysma myoides muscle and strong fascia of the neck were dissected back along with the skin. Secondly, in dissecting down the tumor from the occiput and from the chin, no conspicuous artery bled ; and my assistant, while I dissected along the line of the jaw, followed my knife with his finger-points of both hands, so arranged in a line, and following the incisions in its whole length so correctly, that by holding down the surface from which I was dissecting away the tumor, he saved the arteries which might otherwise have been cut, and

was ready, had an artery bled, to cover it instantly, and mark its place by clapping the point of a finger upon it; and thus he followed the dissection over the angle, and along the whole length of the jaw-bone, repressed the throat where the lingual arteries and nerves run along, and, by pressing down the carotid artery and its sheath, enabled me to carry my dissection down very low, I dissecting and pulling the tumor away from the jaws, while he repressed the parts, at one time with the line of his fingers, at another period of the dissection with a long flat piece of sponge, cut for the purpose. Thirdly, turning the mastoid muscle now off from the tumor, I began to tear upwards and dissect the lower part, that which projected, according to the natural relation of the parts, from under the mastoid muscle at its back part: and here, for the first time, I found reason to hesitate; for this part of the tumor was connected actually with the spine, it seemed to shoot down strong thick roots, or fangs, betwixt the transverse processes; the external branches of the nerves which proceed from betwixt the cervical vertebræ, I had no scruple nor fear of dividing across, but I was come now almost to the flat fence of the vertebræ. I was going deep behind the pharynx and the sheath of the carotid, and was sensible that the dividing the phrenic nerve (for the principal part, you recollect, of the third cervical nerve is destined for the diaphragm) would probably prove fatal. The harm I might do was terrible, the good problematical: very little of the tumor remained, it was such as even my assistant could hardly perceive, much less a spectator, but I found myself not entitled to venture farther; I therefore cut these roots across, and, having thus

delivered the patient from this tumor, I felt the great chasm left by it. Now, Gentlemen, I am explaining these matters for your instruction, and the good of humanity, and with thoughts far above any politic regard for my own reputation, such as might tempt me to conceal or palliate any fact : the little portion that was left of this tumor I could hardly feel : I had no misgiving in my own mind beyond that vague, indefinable anxiety, which an upright man should feel after an operation, however promising, and which I have never failed to suffer from, even where most successful, for I am ever apt to imagine that I might have performed the operation better, and this was all I felt at the time ; it was only by future consequences that I was struck with regret for not venturing a little deeper*. The chasm left by the extirpation of the tumor I next examined : the dissected mastoid muscle lay loose and flapping, and we turned it occasionally over, from one side to the other, to look for bleeding vessels, but there were none ; there was nothing but the very slightest general oozing ; the surfaces were dressed with lint, with a very gentle compression : the wound supplicated favourably, and healed within the month, but the tumor has grown again to a great size. Such are the difficult and distracting circumstances to which those are reduced who, from their own timid dispositions, or the ignorance of their medical friends, have allowed an indurated gland to grow, and fasten itself by adhesions to the surrounding parts, and to push its roots deep into the neck, or axilla.

* The tumor, in little more than a year, began to grow again ; and is now, at the distance of two years, as large as at the time of the operation.

DISCOURSE VII.

OF SALIVARY TUMORS.

But it is not the discussing of interesting doubts, and questions of life and death, nor the performing operations within the extreme limits of possible success or possible safety, that constitutes the chief occupation of one engaged in practice. The more homely talent of distinguishing the various aspects and characters of tumors, and treating them judiciously, is far more desirable to acquire; and, indeed, there is a very perplexing variety of tumors within the mouth, and round the jaws, which one learns to distinguish only by referring their various aspects to corresponding peculiarities in the structure of the parts. The tumors which I have just described are of a very malignant character, and I confess I know not whether to refer them to the salivary or the lymphatic glands; to the latter rather, I believe. This, for example, of Mr. M——, though it looks like a tumor of the sub-maxillary, I know to be a tumor of the lymphatic glands; had it been a tumor of the sub-maxillary gland, which holds imbedded, I may say, in its substance the facial artery, it could not have been extirpated without dividing that artery: the sub-maxillary gland is divided into two masses,

and the trunk of this artery is received into the recess or cleft; the artery seems to twist round the gland, and I have, both in extirpating the sub-maxillary gland, and in assisting at such operations, recognised it by this mark.

The following case, if not full of interesting particulars, is, at least, accompanied with useful rules; and I transcribe it from my case-book, with those reflections which arose in my mind when forming my opinion and preparing for the operation, as I have ever done, with a scrupulous and conscientious desire to foresee every eventual danger, and recollect every circumstance anatomical or pathological, which might contribute to my patient's good: the reflections, you will perceive, bear a mutual relation to the instruction of my pupils, and my own improvement. It is the case of a young lady, who came from a very great distance, urged by her own fears and the persuasions of her surgeon.

OBSERVATIONS.

First, I observe in this lady's case, that the gland affected seems to be the very gland which, after an unsuccessful operation, grew to so immense a size in the case of Jenny Brown; and in her, though the tumor arose from the slightest and most accidental cause, without any cancerous diathesis, or other malignant tendency, it proved fatal by suffocation, the most miserable kind of death. What might have become of this lady it is easy to foresee, had she not been warned by her surgeon, and alarmed by the recent accession of pain, for her own safety.

Second, When we are consulted what is to be done in any particular case, we are in other terms called on to prognosticate what will be the patient's condition at the distance of one or two years. In the present case, the gland is very large, and of a stony hardness ; it never can suppurate, it is even threatened with a cancerous inflammation ; it is indeed incapable of any other ; the pain requires that something should be resolved on ; and our prognostic may be safely grounded on this unquestionable assumption, that such a tumor will not fail to grow, and that in one or two years the deformity and bulk will of itself be a motive, while the suffocating condition of the patient will be an absolute reason for operating, however dangerous the operation may be rendered by such unwise delay. It is, moreover, to be observed, that the gland is the sub-maxillary gland, which has the facial artery nitched in betwixt its two lobes, not so inextricably, indeed, as the parotid is connected with the carotid artery, but in a degree to give trouble to the surgeon, and accompanied with a degree of danger (in the case of operation) which is well worth calculating.

Third, We are to regard the actual circumstances of every patient as a part of his case ; and the danger to this lady, if remanded to her own country, so far distant, and so difficult of access, is but too palpable. Should we speak to her the usual temporising language, and say, “ It will, perhaps, get well, a slight course of mercury or cicuta may be useful, and time may do much, and, perhaps, it may be well to wait ;” it may happen that the gland may become stationary in its growth : a mercurial course may be of use ; but

I fear that this is in the truest sense tampering with a tumor, and that time can do nothing but increase the danger. It seems to me but too possible, that this lady, before she can take a second resolution, and accomplish a second journey, will be suffocating, and in immediate danger of life ; then we shall not venture to do that operation, which is now comparatively easy ; for this gland being seated in the angle betwixt the trunk of the carotid artery and its first great branch, the maxillary or facial will distend that angle, and both the trunk and its branch will be too closely united with the tumor to admit of operation, or will make the operation most dangerous and critical.

Fourth, Though there is no imminent danger in the proposed operation, the circumstances are sufficiently forbidding to make it far from being a matter of choice. My assistant was unwilling that it should be performed without the advice of Dr. Monro, and his assent seemed rather reluctant. The tumor is of very considerable size ; it is plainly the sub-maxillary gland, as may be inferred from its shape, size, and peculiar hardness ; not a lymphatic gland, for then, most likely, more than one would be enlarged. We must be resolved to deal with this artery in one of two ways ; either to dissect it so from the tumor as to insulate the artery, and turn the tumor from under it ; or, should this attempt threaten to embarrass our operation, to cut it across where it lies over the middle of the tumor, tying before dividing it, lest it should shrink back towards its trunk. No one circumstance is so favourable to the operation as that extreme hardness of the tumor, which makes the operation neces-

sary ; for that shews it to be circumscribed, and to be little connected by inflammation with the cellular substance.

NOTES OF THE OPERATION.

We had agreed either to dissect so as to lay the artery to one side, while employed in extirpating the gland, or to tie and cut across, and so proceed with greater freedom, in the more dangerous part of the dissection ; but, after the first incision which I made, according to the length of the jaw-bone, the incision being long and more free, the several parts appeared in so advantageous a state, as to leave no doubt nor difficulty in the rest of our proceedings. The artery presented itself, arching over the diseased gland, much elongated and serpentine ; so that, in place of embarrassing the operation with any needless delicacy, or endangering the shrinking up of such an artery towards its trunk, we passed two ligatures of single thread under it, cut betwixt the ligatures, and then proceeded more confidently in extirpating the gland : there we found no such adhesion of it to the trunk, or rather to the sheath of the carotid, as we had reason to apprehend ; the tumor was of such a stony hardness, the cellular substance so loose, the arteries so disengaged from it, that, without the help of the knife, with only the swallow-tailed end of its handle, which I used as a scalpel, I turned out the tumor in a few seconds ; and the tumor carrying its cellular substance along with it, the styloid muscles were left as clean, distinct, and bare, as after a neat dissection in the dead subject.

In regard to operations where blood-vessels of great size are endangered, or actually wounded, I think I may safely propose those simple rules to my pupils for their general conduct :—

1st, To consider well the anatomy of the natural parts, and the probable connexions of the tumor, so as not to plunge unadvisedly into difficulties, which may unnerve his hand in the most critical moment ; never to endanger any unexpected bursting out of blood, such as might cause alarm ; for to wound an important artery, without having foreseen the possibility of so doing, or to encounter any danger of this nature, without having approached it by slow and delicate dissection, and provided against the sudden eruption of blood, by concerting with his assistant what is to be done in each possible case, would be an indelible disgrace to the surgeon.

2d, The surgeon, while he approaches a dangerous point with all possible circumspection, and with precaution amounting almost to timidity, and tries to avoid any important artery, or is careful, as he approaches it, to distinguish it by its place, to feel it with his finger, to dissect so as to avoid, or to tie it, should, the moment the artery he fears, or any artery is wounded, and blood bursts out, dismiss all fear ; then let courage and rapid execution take place of fear, or circumspection : let him plunge his finger down to stop, or to catch the artery, or dive with his needle to surround it. If there be nerves, important nerves, as in the axilla, which are endangered by this stroke of the needle, he must be prepared to decide instantly how far the danger authorizes such a plunge. If the long course of the wounded artery gives him

room to seek it at another point, he must be prepared instantly to run his knife backwards along its course, or to cut with his scalpel, or plunge with the needle, into the hollow where it lies, without a moment's delay : a man who is not prepared for this by his knowledge of the blood-vessels, and able for it by his courage and presence of mind, is no surgeon.

Thus, circumspection and daring have each their peculiar point of time ; neither is to be regarded as forming a prominent feature in the temper of the surgeon ; but that knowledge of parts, and firmness of mind, which prescribes circumspection and caution in approaching a dangerous point, will ensure confident and rapid execution, when danger is actually present.

3d, The surgeon, when he speaks of courage, must always distinguish the discreet and deliberate boldness which belong to his professional character, from the personal bravery, or fool-hardy contempt of danger, which he is entitled to indulge in his own individual case ; it may to himself seem heroic, or gallant, to endanger, or to throw away life ; but, when responsible for that of a fellow-creature, he has no such latitude of sentiment or action, and must be guided, not by feeling, but reason. So strictly is he bound to avoid danger, that he is actually bound to afflict his patient with protracted and severe pains, to ensure his safety ; and to endure the unmerited reproaches of whatever ignorant or ill-judging person may choose to report his operations as awkward or slow. Dispatch and a show of dexterity will ever be a poor apology for endangering life ;—and pain, a bad reason for hurry or perturbation, where loss of

blood may be the forfeit: the pain of pulling the stump of a corrupted tooth is more severe and often more protracted than that of the most important operations; the pain of simple incisions is never deadly.

4th, Protracted pain is attended with danger, only in those operations where, from such torturing inflammation of some internal part, or great cavity, as the knee-joint, the thorax, the abdomen, may ensue: and thence, as there are no blood-vessels which a good surgeon can endanger, in performing lithotomy, and as the striking the bladder securely depends upon a perfect knowledge of the parts, he must ever be accounted the best surgeon, who performs his operation the most rapidly, because he does so most securely: here too a skilful man is anxious to operate rapidly, because he knows that to save pain is to prevent inflammation, and he has seen too often the mangling of unskilful operators, the turning of the stone in the bladder, and tearing it along, occasion abdominal inflammation and death.*

* These observations will derive some value from the following narrative.—It happened in one of the first hospitals in Europe, that from a most culpable negligence in not securing this facial branch of the carotid, the patient was every way endangered; first, by loss of blood, which flowed profusely, and uncontrolled, except by the tightness of those stitches with which the outward wound was drawn together: secondly, by suffocation, from the blood being injected impetuously into the cellular substance of the neck and throat. The narrative contains, not an avowal of a mistake in judgment, but a confession of negligence, which I think might have been spared, since it conveys no useful lesson to the young surgeon, and is a blunder too gross and palpable even to be committed a second time. The narrative I am about to lay before you, reminds me of nothing I have ever seen in practice, except the awkwardness of a very petulant man, who, refusing to tie the spermatic cord in the usual manner, would secure its artery no other way than by

There is a species of tumor, of a complexion the most opposite possible to that just described ; a vesicular transparent tumor, seated on the tongue : as the hydatid of the testicle, brain, liver, &c. was long supposed

taking it up apart, on the point of his tenaculum ; and being really very mal-a-droit, he permitted the stump (I may call it) of the spermatic cord, to slip from betwixt his finger and thumb, while pecking with his tenaculum at the artery ; the cord was suddenly retracted within the ring ; the surgeon had actually missed the artery, and yet was so disingenuous as to affect to believe it secure ; the patient was laid in bed ; and in about two hours, being awakened from his first sleep with a sense of distension and pain, we found, upon undoing the bandages, the scrotum enormously distended, and the skin of the thigh and abdomen injected with it.

Here follows the case I have just alluded to :—" A man came to St. Bartholomew's hospital from Oxfordshire, with three diseased lymphatic glands, each of the size of a very large plumb. They were situated beneath the basis of the jaw, upon the mylohyoides muscle. They resisted the attempts which had been made to discuss them ; and had not been removed, from an apprehension that a dangerous hemorrhage would take place in the operation. The glands had gradually, though very slowly, attained their present magnitude, for the disease was of fifteen years' duration. The surrounding parts were not affected. Sir Charles Blicke undertook and accomplished the removal of the diseased glands, the structure of which was exactly such as has been described. This case is related, in the first place, as it shows most clearly the usual characteristics of this species of diseased structure ; which are those of slowly increasing, of not being prone to inflammation or tending to suppuration.

" It may not be improper to mention, though it is irrelevant to the present subject, that, in the operation, the external maxillary artery was unavoidably divided. It did not, however, bleed immediately after the operation, so that this circumstance was not perceived ; and the edges of the wound were brought together by one suture, and accurately and firmly closed by sticking-plaster. Shortly afterwards the patient felt a sense of choaking, which increased to a state of almost actual suffocation. Indeed it seems probable that this might really have happened before any one could have got to his assistance, had not some of the plasters fortunately given way, and afforded some discharge to the blood : for a very great quantity of coagulated blood had collected within the wound, and compressed the trachea and pharynx to a greater degree than would readily be

to be a mere enlargement of a lymphatic vessel, this clear vesicular tumor on the tongue has been supposed to be a mere distension of the sublingual ducts, which are indeed delicate and transparent, and lie in this direction beneath the tongue. These vesicles are merely accidental; they are stationary, which they would not be if they were dilatations of the duct; they pour out no more fluid than what the vesicle itself contains, which would not be so if they were connected with the salivary gland; upon being punctured they rise again in a week to their original size: one which had been so punctured returned three successive times. A more singular appearance cannot be seen than a pure and pellucid vesicle projecting from beneath the surface of the tongue; but it is harmless, excepting only in so far as it presses up the tongue, although, indeed, in children it prevents sucking, and in the adult affects the speech. It is stationary; for I have seen it continue in children, or in young people, for years; when slit open, it leaves no sore, nor even a discernible mark, but in a week it is just what it was before: I have found no way of

believed by those who had not witnessed the fact. This circumstance is mentioned to show the impropriety, when there is any chance of hemorrhage, of closing wounds so strictly by sticking-plaster, as to allow no exit to any blood that may be effused; and it is particularly unsafe in circumstances similar to those of the foregoing case. If the hemorrhage be but small in quantity, and the escape of the blood be prevented, it separates the sides of the wound which should lie in close contact, and thereby prevents their immediate union; and, if it be considerable, it deserves to be remarked, that, so far is the compression which the confined blood must make on the arteries, from which it was poured, from stopping the bleeding, that it seems to be a stimulating cause, exciting an hemorrhagic action in the vessels. This remark is manifested by the present, as well as by many other cases in surgery."

ridding the patient of this, but to transfix the vesicle with a little hook, and cut it freely out with scissors.

A proper tumor of a salivary gland is more frequent in the adult, and is a truly formidable disease; for the salivary glands are inclosed by the muscles of the throat and tongue, the sublingual gland especially, which lies under the tongue, is covered by the genioglossi and hyoglossi muscles; it is thence so invested with thick masses of flesh, and so compressed, that, when it falls into disease, not even suppuration can give relief; the collected fluid, whether pus or saliva, cannot make its way through so great a thickness of parts; it continues for years, and, if idly punctured, without any care being taken to obliterate the sac, or distended part of the gland, repeated distension of it, accompanied with inflammation, so thickens the root or vascular part of the gland, that it grows into a solid tumor, sometimes fatal, by compressing the throat and tongue. Misconduct in not distinguishing such tumors, in not obliterating very carefully the cavity of all sacculated tumors of the neck, and in not preventing the formation of firm and indissoluble roots, or bases, is an error so very frequent that I think I cannot do you a greater kindness, than to lay before you a few examples as documents.

“ Margaret Murray, a woman about fifty years of age, had crawled from one of the miserable Edinburgh closes into the Infirmary, asthmatic and suffocating, with one of the most formidable and bulky tumors I had ever seen; it resembled that of Jenny Brown in situation and nearly in size, but its nature

was altogether different. Hers was throughout of a stony hardness ; this, though of a degree of hardness resembling a cartilage, was hard only on its surface, while there was within an obscure fluctuation, which determined my opinion both of its nature, and of what should be done. The tumor was as big as the patient's head ; it stuck close under the jaw, and so compressed the throat that the poor creature lay gasping for breath ; the least necessary motion in putting out her hands, or struggling to raise herself, threatened suffocation ; her eyes were staring, her nostrils wide dilated, and her hands grasping every thing near her as if for help ; her friends supported her perpetually in the recumbent posture ; her face was livid, and the lips purple with stagnant blood ; the tumor itself was universally lurid, or of a deep purple cast, as if verging towards gangrene ; and indeed I doubt not if it had been possible for the woman to have survived in this condition, it must have fallen into gangrene ; it seemed so solid withal, that the surgeon was doubtful what should be done, and refused to puncture it. My importunate representations at length prevailed, and, at an irregular hour, and in no very regular way, it was punctured ; a trocar too small for such a purpose, was plunged into the tumor ; the matter which flowed was thick and ropy, like that which is most frequently discharged from a diseased ovarium ; it resembled sago made with port wine ; about two pounds flowed without any sensible diminution of the tumor. It was expected, that this first discharge, and the thinner gluten which afterwards flowed, would give relief ; but those who indulged such an expectation

did not recollect, that to produce a secretion so profuse, a great mass of vascular substance is required ; and the consequence of permitting a gelatinous collection of matter to attain to such a size is, that the vessels by which it is secreted, not being, as in a case of suppuration, ulcerated or destroyed, the stool or basis, consisting of those vessels, is consolidated into a tumor ; there is a sac indeed, which may be emptied, but there is also a stool or nucleus to that sac which cannot be discussed, which indurates more and more, and actually increases in size as soon as the sac is emptied, and the surface exposed to inflame : thus the stool of a fluid tumor becomes itself a solid one ; and I have seen the imprudent treatment of such a sac establish a solid tumor, so large as to impede the motions of the jaw, and threaten suffocation, yet too intimately connected with the great vessels and nerves to be extirpated. So it was in this poor woman ; there was no diminution of the tumor, not even a temporary relief from the suffocation, though the matter continued, while she survived, to run from the opening thin and pellucid, like saliva. She lay reclined, always struggling for breath, and sometimes attacked with violent asthmatic paroxysms ; the jaws almost entirely closed ; the mouth continually open ; the nostrils dilated ; and the stupor, which such difficulty of breathing causes, increasing every moment, and her swallowing being equally difficult with her breathing, she expired in the fourth week."

Timid and irresolute sentiments on the part of the surgeon, often bring the patient into those desperate circumstances : one surgeon confidently and sensibly

advises that a tumor should be unrelentingly opened ; affirms that an incision, since it is instantaneously performed, cannot be much more painful than a puncture, which is but a momentary pain, and protests that, by incision is the only way in which the sac can be obliterated, and a tumor, more formidable by being more solid than the first, prevented from growing : another surgeon contends, that, in a sac containing merely a fluid, a puncture will suffice ; this opinion is too flattering to the little fears of a patient, not to be received ; the puncture is made, and the patient becomes the more credulous, since the tumor disappears ; but it returns again, and is again punctured, till, in the course of a few months of expectation, and after various trivial operations of this nature, the basis, probably the body of the gland itself, is hardened into a solid tumor, and then not even that operation, which would have succeeded at first, not even the slitting it open and ulcerating with escharotics, whatever surface still remains, will prevent its continued growth.

Though I find salivary tumors usually filled with a pellucid, gelatinous fluid, I have found them not unfrequently filled with a mixed matter, resembling honey, or rather resembling mustard, and consisting of a tenacious, gelatinous matter, mixed with grains and lumps of a bright yellow colour, and an intolerable smell. I have taken notes of one case of this nature in a young woman from Berwick, whose native peculiarity of accent, had got a singular aggravation, by such an uncouth obliquity and imperfect motion of the tongue, as conveyed the notion of her attempting to chew, and turn each vocable with her tongue

before she proceeded to swallow it, in place of uttering it. This was produced by a tumor of very great size, and of a character so peculiar as plainly to denote its nature : it consisted in a vast collection of matter in the sub-lingual gland, and as that gland is covered by the whole thickness of the tongue within, and by the mylo-hyoidæi muscles without, and bounded by the line of the jaw-bone, it had the following singularities of character : it could not be distinguished as a tumor, but had rather the appearance of a general swelling of the lower part of the face, jaw, and neck, such as often accompanies severe tooth-ache or mumps : upon laying the hand upon the outside of the neck, below the lower jaw-bone, the whole hand was filled with a swelling, apparently solid, but so little convex or circumscribed, as to resemble in no degree the tumor of any particular gland ; and yet so limited and so firm, as not at all to resemble the general tumefaction proceeding from tooth-ache. Upon introducing the finger into the mouth, you found the tongue raised, turned edge-uppermost, and pressed entirely towards the left side of the mouth, the external tumor being in the right side ; upon pressing the fingers very firmly down by the side of the tongue, and re-acting from without, you could sensibly perceive, not so properly a fluctuation as an elasticity, which implied the presence of a fluid ; the tumor seemed elastic, like a foot-ball, but with a degree of tension which made it seem almost solid. It was by comparing a variety of circumstances, especially the original place and slow growth of this tumor, that I confidently referred it to the sub-lingual gland ; in this I had the advantage

of the surgeon under whose particular care she was ; but I did him the justice to send her back to him again and again, expressing my opinion, and my wish at the same time, that he should do whatever he might imagine right. By good fortune she called upon me the day she was to return home, nothing being as yet done to the tumor, but supplied with abundance of blisters and plasters to apply at a fit opportunity to her throat : I felt now that professional ceremonies should give way to essential charities : I placed her in a chair, and almost without her consciousness, at least before she was aware, struck a fine bleeding lancet deep into the tumor by the side of the frenulum linguæ, where, from the firm compression of the surrounding parts, the matter, though too gross to pass freely through such an opening, was spewed out from the orifice in a manner expressly resembling that in which yellow paint is squeezed out from the bladder upon a painter's palette. It was of a deep saffron colour, thicker than mustard, mixed like gruel with seed-like particles, and extremely foetid. I knew that the tumor was not emptied, though the outward swelling was almost gone ; but I also knew, that, even though I should not enlarge the opening, the second secretion from the surface of the sac, which is in all cases thin, would dilute and wash out whatever viscid matter remained ; and, when she saw how suddenly my prognostic was fulfilled, she expressed a perfect confidence in whatever I predicted, and a perfect willingness to submit cheerfully to whatever I proposed to do. Next day I introduced the point of the probe-bistoury into the orifice made by the lancet, and knowing that the lingual artery lies on a

lower level, imbedded among the muscles, and running along the lower surface of this tumor, while I had over the point and blade of my bistoury nothing but the inside membrane of the mouth much thickened, I run it fearlessly, and, at one stroke, as the less painful way, along the whole length of the tumor, when the thickest of the yellow mucus flowed freely, or was raked out with the points of the fingers, and the handle of the bistoury ; and the tongue descending now to its natural level, was in a capacity once more of delivering the peculiar dialect of her native city in all its purity.

So tense and apparently solid was this tumor, in consequence of the compression of so many surrounding muscles, that her surgeon mistook it for a solid and strumous swelling. I reckoned that in this, as in all cases of sacculated tumor, the second secretion, which is thinner, would wash out the thicker mucus, and I was not deceived ; but she left me too early for me to witness the obliteration of this sac. I find it in all such cases a matter of some importance, especially in a girl, to anticipate the outward suppuration of any sacculated tumor, by puncturing it, though to a great depth within the mouth, and under the tongue, and equally necessary to be at pains in preserving the opening, and obliterating the sac : a slight misconduct in this respect occasions much distress to the patient, and much superfluous labour to the surgeon ; among the examples of this which I have had occasion to remark, the following is the most instructive.

“ The drawing of Peggy Hall represents a tumor which, in all its stages, and for a course of three

years, was ill understood, and worse treated : the drawing represents a fluid sacculated tumor of a great size, bearing upon it the mark of a very unskilful attempt to open it : she was a stout and lusty girl about twenty-two years of age ; the tumor occupied all the left side of the neck, from the lobe of the ear and angle of the jaw, quite to the sternum, displacing the mastoid muscle. This, like the tumor of Jenny Brown, arose from that slight inflammation which follows the extraction of a tooth. More than two years ago, after being distracted with tooth-ache, she had two corrupted teeth pulled from the lower jaw, and she distinctly remembers, that, two days after the extraction of the second tooth, she was sensible, upon undoing the flannels in which her swoln and inflamed face had been for some time wrapped up, that there was a little lump, about the size of a small plum ; it lay under the angle of the jaw, and has never ceased to grow, and has now, without the slightest pain or change of colour, attained the size here represented.

“ In the month of April, 1799, she was directed to apply some kind of plaster ; in the month of May, she was advised by Dr. Monro to have it opened ; in a few weeks after, this was attempted by the surgeon of the village in which she lives, who made a large incision, but being soon alarmed, he laid aside the knife and lancet, and prosecuted his work rather by boring than by cutting ; he tried with probes and directories to make good his way into the sac, but, having pushed them very deep, and toiled half an hour in vain, he abandoned his purpose : it is the scar of this ill-concerted operation that is seen on

the face of the tumor. The certain conviction that a respectable surgeon did, three months before we saw it, dig to a considerable depth, without finding matter ; the manifest proof of his good will to reach it in this large scar left after his operation, and the firm adhesions under it of the skin to the mastoid muscle ; the difficulty, too, of distinguishing fluctuation in a very tense sac, made more tense by the general construction of the platysma myoides, and the strong pressure of the great mastoid muscle, was enough to disconcert us, and impress a belief that this tumor could not be of a fluid nature ; and indeed these considerations induced almost every surgeon who had a share in the consultation to pronounce, that the tumor contained no matter, and should not be punctured. But to decide thus is to forfeit the natural advantages of our own skill, and indeed is little better than yielding our own deliberate judgment in favour of the opinion of a man plainly ignorant and awkward : so far from trusting any thing to his judgment, or believing that he miscarried, only because the tumor was solid and not fluid, I think it no difficult matter to demonstrate the kind of awkwardness which made him miscarry in his operations.

“ The tumor is distinctly, to my apprehension, a great sac of fluid secretion ; there is nothing doubtful in the case : this sac lies under the platysma myoides, and under and before the mastoid muscle ; the belly of the mastoid, being raised upon the bag or tumor, feels soft and flaccid, and might have seemed to an unskilful surgeon to form a part of the tumor ; by making his incisions over the belly of the muscle,

he could not penetrate to the sac otherwise than through the body of the mastoid muscle ; having cut to a considerable depth among solid and quivering flesh, he became alarmed ; willing still to penetrate farther, and yet without danger, he bored with his finger, cut a little obliquely with his knife, and bored a little more with his directory, till, having buried it apparently in the tumor to the depth of three or four inches, he believed, and to the ignorant relations and patient, seemed to prove, that there was no fluid in the tumor, while there was nothing singular in all this but his own awkwardness : he had penetrated entirely under the belly of the mastoid muscle, pushing his probes obliquely betwixt it and the sac ; to avoid the great vessels of the neck, he wrought obliquely backwards ; by cutting obliquely backwards, he made good his way under the belly of the mastoid muscle. The young woman endured the disappointment, and suffered the tumor still to extend, not without great inconvenience and deformity, for seven or eight months : the operation being then performed more correctly and confidently, every circumstance tended to confirm the notions I had formed of this awkward proceeding : the surgeon who now operated was timid in his manner of performing the operation, and careless in conducting the cure. The incision through the skin only was freely made ; the incisions through the platysma myoides were made timidly, the flesh of its fibres retracting and quivering as they were cut : the sac then burst from betwixt the divided fibres of the muscle, white and transparent. I could almost distinguish the fluid through it ; and this hy-

drocele-like sac being cut, several pounds of thin serous fluid gushed out: then the long iron probe was passed across the cavity of the tumor, and its point cut upon at the anterior edge of the mastoid muscle; in short, near the place of the former incisions; whereas, to lie across the tumor, the point should have been cut out behind the belly of the mastoid, and then the seton or cord would have more effectually inflamed the sac, and obliterated the cavity.

But this girl was destined still to suffer from timid practice. The seton, ill introduced at first, was worse managed; in whatever way introduced, it should have been made to obliterate the sac; the sac was permitted to remain always half full, its walls were never brought so together as to favour their adhesion, the cord was even withdrawn, and the orifice permitted to heal; the fluid was collected again to the amount of two pounds; it was again evacuated by forcing the old opening, slitting up a part of the muscular sac with a probe-pointed bistoury, and obliterating it (a purpose which was very slowly accomplished) by strong injections of port wine and stimulant medicines.

In the course of this operation of obliterating the sac, I rectified an opinion which I had once conceived; I doubted whether this was truly a salivary tumor, but when I now considered how improbable it was that a lymphatic gland should have so large a sac, and so profuse and so watery a secretion formed within it, or be any way distended into so delicate a sac: when I considered how closely the gland lay under the angle of the jaw when it first swelled; and

how it hardened at its basis, while the sac was kept distended by injudicious treatment, and in an inflamed state ; especially when I considered the form it assumed, viz. the sac, thoroughly inflamed, the basis contracting into a solid and lumpy tumor under the line of the jaw-bone, I could no longer entertain a doubt of its nature, but ranked it with salivary tumors.

The cure of this girl, which was protracted by unskilful treatment to six months, should have been accomplished in three weeks : and while the sac continued pouring out matter from its thickened walls, and hardening into a solid tumor under the jaw, the girl was in danger of having established an incurable and growing disease ; for a tumor so situated, and proceeding from such a cause, could never, by the most dextrous operator, have been dissected away from the neck and jaws *.

There is perhaps no deviation from the natural structure of the human body so slight as varix, and that aneurism, which I have thought myself justified in naming Aneurism from Anastomosis, and yet there are none which occasion such ugly and fatal diseases. Indeed I cannot but attribute many of the most mortal diseases of the internal viscera,

* In the former edition, the author here takes occasion to impress upon his reader the importance of distinguishing aneurismal and venous tumors from those he has described : he gives a case of carotid aneurism, which is transferred to the next volume. He then proceeds to make some remarks on the tumor which he called *Aneurism from Anastomosis*. The reader should here refer to p. 383, where the original description of this disease is given.

especially of the liver, spleen, stomach, rectum, &c. to this slight alteration of structure, the dilatation of vessels. Varix is simply an incommodity in many cases, a mere over distension of the veins, productive, notwithstanding, in the limbs, in the rectum, in the testicle, and other accessible parts, of great distress : for the most delicate nerves twine round the veins, the over distension of those of the limbs, and testicle, occasion a benumbed and oppressed feeling, pains like rheumatism, and distress indescribable, of which these who are not the sufferers are insensible and incredulous to such a degree, that complaints which are really distressing are, merely because they cannot be understood, ascribed to a hypochondriacal temperament, and cruelly disregarded.

But the disease, which is described more at length under the designation of “ Aneurism from Anastomosis,” at p. 383, proceeds from something very different from mere dilatation of veins : the disease is not formed, till an essential change of structure, and a new mode of circulation has taken place. Varix is a simple dilatation of veins, produced by time and long use, by stricture upon the great returning trunks, by swelled glands, by imprudent ligatures, by pregnancy, by much walking, as in soldiers, labourers, or running footmen ; it is a dilatation unsightly at first, benumbing and painful next, and highly inconvenient and oppressive in the next degree : annihilating gradually the secreting parts of the glands, as in the testicle, liver, &c. or ending in destruction of parts, in ulceration with hæmorrhagy, when seated in the limbs. But aneurism from anas-

tomosis is an entire change of structure; it is a dilatation of veins, in which they do not give way from natural debility, are not distended by any kind of constriction, but are forced and enlarged by the diseased action of their corresponding arteries. These happen first from a blow, a pinch, or a laceration; or, in consequence of original mal-conformation, a violent action of the arteries, and a mutual enlargement of arteries and veins, while the intermediate substance of the part is, by this impulse, and in course of time, slowly distended into large intermediate cells, which are dilated at last into formidable reservoirs of blood. The altered structure of the part resembles then that imaginary parenchyma, or cellular substance, which the early anatomists of Europe presumed (but indeed they pretended to prove this by injection) was interposed betwixt the extremities of the arteries and those of the veins in all parts of the body, especially in the secreting viscera. They imagined they could make such intermediate cells visible. This they entirely believed, and as yet we know not how far to condemn their theory: but in the disease I now speak of, it is a fact, and we describe nothing but what we can almost see. The blood is poured into the cells of such a tumor by innumerable arteries, whence it has even in the beginning an obscure throbbing, and in the latter stages a strong and deep pulsation: from these the blood is continually flowing into veins, which, in place of imbibing it by absorption, receive it with such patent orifices, that in a few moments, and by a very gentle pressure, the largest tumor of this nature may be compressed, and all its blood repressed into its veins, leaving only a doughy

feeling of thickness. The veins form a conspicuous part of such a tumor, but the intermediate cells are as sensible a part of the structure ; for when the tumor is thus emptied, we feel that the blood is repressed from the sacs into the veins ; and, when the tumor is large with a purpled surface, we feel the sacs individually prominent ; when they burst, or are punctured, we see the blood well out from them ; and when the tumor is extirpated, they seem to form its chief bulk : every pulse of the heart, every action of the arterial system and of the affected vessels, is accessory to the increase of the tumor, which as often begins from a pinch, a blow, or speck of ulceration, as from native mal-conformation ; and which, though it begins in a spot, is destined to increase to an unlimited size, at least, till the parts can no longer bear the force of the circulation, but become thin and burst.

The character of this tumor results from its structure : it is a tumor beginning often from a slight injury, or imperceptible cause ; increasing from a slight thickening, to a tumor of some magnitude, but still colourless, void of pain, soft, inelastic, of a doughy consistence, and having a woolly or cushion-like feeling, when pressed and moulded under the fingers : it is greatly inflated by violent exertion ; especially running, straining, struggling, or repressing the breath ; and it recedes slowly upon pressure. But it is colourless and void of pulsation only in its early stages ; when the cells are enlarged into sacs, and the mutual communications consequently free betwixt the extreme arteries and veins, the whole tumor pulsates distinctly, and, when excited by exertions or

muscular struggles, it throbs furiously; the tumor assumes then a purple hue, the apices of the sacculi, or lurid parts, become sensibly thin; the patient is alarmed from time to time with slighter hæmorrhages, which, becoming more frequent from various points, and very profuse, he is at last debilitated, changes his complexion and colour, loses his health, and dies.

This disease I have described as being more peculiar to the skin, and frequent in the stomach, spleen, and internal viscera; but if there be a part of the human body where this singular deviation from the healthy structure is frequent, it is in the neck, perhaps proceeding from the looseness of the cellular substance, or the peculiar activity of the arteries, or the contortions and anastomosis of the veins of the neck and jaws, or from the numerous glands of these parts: such varicose aneurism seems to me more frequent in women than in men. In place of philosophizing now concerning a disease, the mechanism of which is explained in the next chapter, I shall briefly lay before you sketches of these varieties which I have had occasion to observe. The general character I have just given of it will serve to mark its external and simple form: but in these anomalous cases where such aneurism is superadded to other diseases, where a tumor originally firm, glandular, or perhaps muscular, congregates around it, where dilated veins, a diseased cellular substance, ulceration and hæmorrhages ensue, it is said to become cancerous. I doubt not that such a change of structure as I have described is essential to the consummation of cancer, and that its increasing

livor, hæmorrhages, and final ulceration, have often much analogy with this disease.

The profuse plexus of inosculating veins about the angle of the jaw, and the corresponding branches of the maxillary and facial arteries, are frequently thus diseased, and still more frequently the veins and arteries of the thyroid gland, whose trunks, as they run down the fore part of the neck, are dilated, and form a conspicuous part of the tumor. Jean Bryce has a tumor of this nature, growing from her early years, the general complexion of which, its form at least, and size, and place, and all of its character that is not communicated through the sense of feeling, is expressed in this slight sketch, No. 53. Like those which occur in the skin, the lip, the eyelids, the rectum, &c. this began in a very small tumor, having nothing peculiar in its form : it began when she was a little girl, has been waxing gradually larger for these thirteen years, and seems to me almost purely an enlargement of the vessels and cellular substance of the thyroid gland. It is difficult, in describing such a tumor, to distinguish the sensations conveyed by the touch and by the eye, from those conjectures which imagination presents to us in handling the tumor. The marks I have taken in my case-book are of a mixed nature ; they are these : the tumor was in its early stage small, knuckle-like, but soft, round, moveable, and without pulsation : whatever its nature may have been at the first, the structure of the part is now entirely changed ; the tumor is now large, soft, spongy, and spreads equally on each side of the throat, filling the whole neck, and occupying expressly the place of the thyroid gland : though

soft, it rolls loose under the skin, is moveable also in respect to the muscles and internal parts, and may, on each side, be worked backwards under the mastoid muscle, especially towards the right side of the neck, where the tumor seems more condensed : it suffers a general subsultus, or shock, from each stroke of the carotid arteries ; but it has also a particular and distinct pulsation within itself, which, though never intermitted, is yet more sensibly felt when the blood contained within it is repressed through the veins into the general course of the circulation ; for, while the cells of the tumor fill again, the blood seems, at first, to ooze or pour insensibly into the tumor, but, when it is a little filled, the stroke of the arteries which are filling it begins to be felt, and, as it fills, the pulsation strengthens till, being completely injected and become tense, there is a deep and strong throbbing in every part of the mass : in this particular case, there is much accumulation of solid matter, i. e. of thickened vessels and cellular substance, besides the mass of circulating blood : the proportion of both can be distinctly perceived, for, by handling, and doughing the tumor, and repressing the blood, it can be so much of it repressed into the veins, as to diminish its size by two thirds ; but no force can repress it entirely, as in smaller tumors, or in varicose aneurisms. When the blood is repressed, the loose doughy feeling of cellular substance and dilated veins is more sensibly felt, and is perceived to form the chief mass, and especially the basis of the tumor : when the blood is thus repressed, you can distinguish, by pinching strongly, a thick and solid sac within the skin, and quite unconnected with it. Besides the other inti-

mations of its connexion with the thyroid gland, and the whole vessels and substance of the throat, I can plainly distinguish the thyroid arteries running long and tortuous over the sides of the tumor*, as if they descended from under the chin, and then spread over the sac (so far are these arteries displaced from their natural course), they divide, upon the surface of the tumor, into lesser, yet very perceptible twigs, then dive into its substance, and lose themselves; while the external jugular veins, dilated both in their trunks and branches, run tortuous over its surface, especially down the middle of the neck.

The whole tumor, when voided of blood by continued pressure, has the puffy feeling of varicose and dilated veins; when distended by the reflux of blood, it has the firm elasticity of a sac full of some fluid, dense as the blood is, and having firm and fleshy walls.

These are the characters of a tumor which is to be avoided any where, but in the neck most of all: which might indeed have been extirpated in its early growth, when circumscribed, small, soft, and not pulsating, by laying open this part of the neck fairly, by dissecting cautiously round the tumor, and tying its root; but now the disease has, by carrying the dilatation of veins, arteries, and cellular substance deep into the substance of the neck, become too formidable to be dissected out. The laying open the neck for the extirpation of so slender a tumor in a little girl, of ten years of age, must have seemed harsh to parents had it been proposed; but how just the prognostic

* The thyroid arteries were, even in their lesser branches, dilated to the size of the temporal arteries.

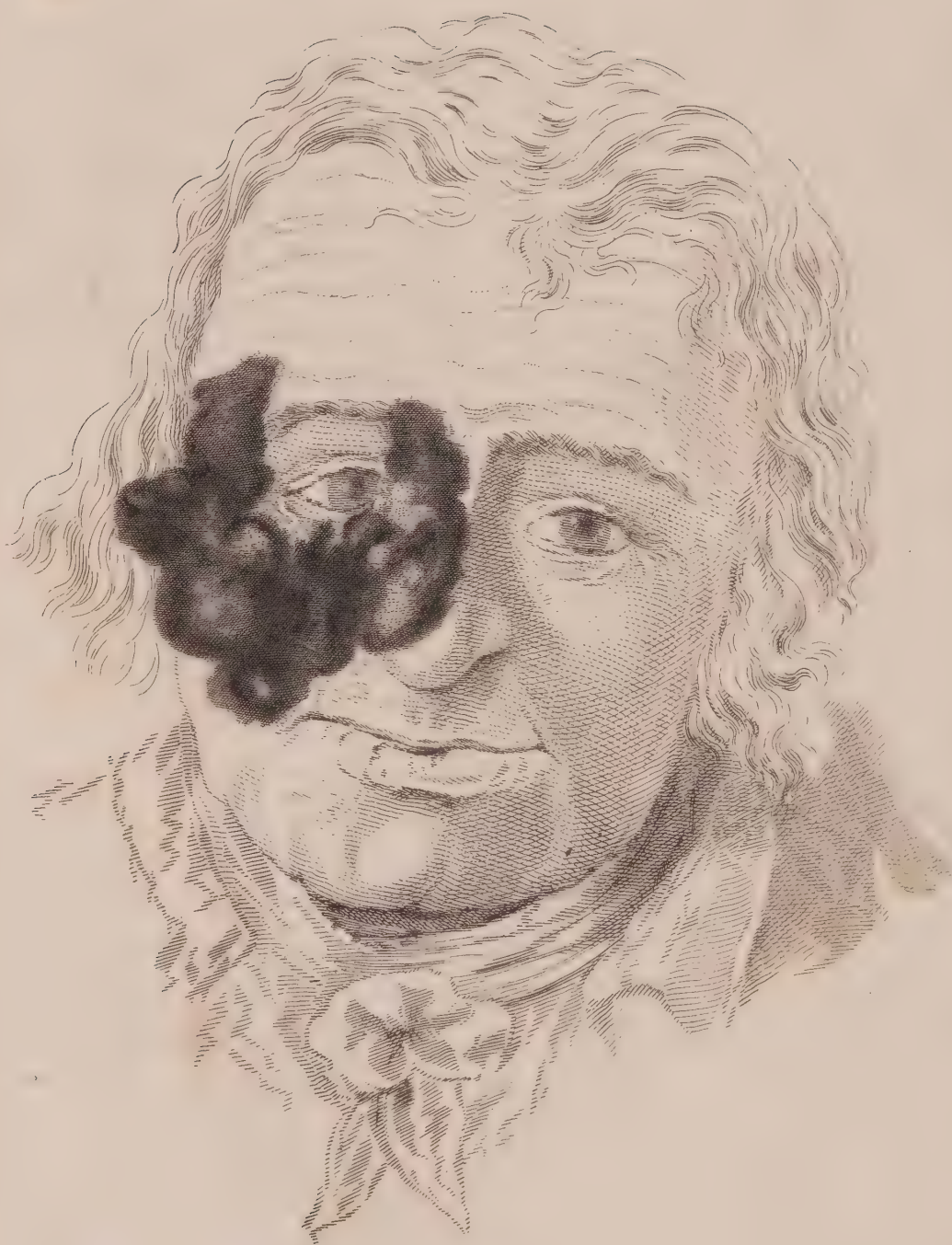
of the surgeon is, when he advises such an operation, never is known till years have elapsed, and the case is desperate. This girl, after enjoying a respite, not without frequent alarms, is doomed, in a few years hence, to feel the consequences of neglecting such a tumor in its early stage: the disease tends, according to my apprehension, to spread inwardly, and the first hæmorrhages will be into the trachea or throat.

The sketch, No. 54, represents a form of the tumor still more circumscribed, and corresponding more perfectly with that description which is given in the next chapter: it is similar to the preceding case in having begun from the girl's early years, and increased till now that she seems about twenty-eight years of age; in having a lively and strong pulsation; in having a thick and spongy basis, seated on the jaw-bone, extending into the substance of the cheek, and over the chin into the substance of the neck and throat; in having this stool or basis less compressible, yet plainly filled with circulating blood, while the central parts of the tumor are more distinctly sacculated, consisting of a wider spongy substance of large cells, or of something like a proper sac, from which the blood can be entirely squeezed out by pressure. But it differs in being superficial, in being cutaneous, or almost so, in having thin walls, and a red colour, deepening into a purple at those points from which the blood bursts out: large dilated veins, two or three especially like venous trunks, descended from the central parts of the tumor, into the veins of the neck, while the thick and fleshy basis of this tumor so encircles the jaw-bone, enters so deep into the substance of the cheek, and joins so

solidly the neck to the jaw-bone, that, though this girl's life were the most valuable (she is, like many I have observed who have these imperfections, an idiot), and her circumstances the most desperate, I hardly know how it could be extirpated, since there is no way of effectually extirpating such tumors, but by leaving not the slightest part of the diseased substance behind.

But pulsation is not an essential nor inseparable characteristic of such tumors, and it is my duty both to give you notice of this fact, and to acknowledge, with that generous temper which becomes one discoursing on matters of life and death, whatever errors or mistakes I recollect in my own opinions or practice. I made a sketch of one form of this kind of tumor, as it occurred in a young woman (also an idiot), about twenty-four years of age, big, lusty, and otherwise in perfect health ; but being accompanied by no friends, I could learn nothing of the history of her disease. Her neck was fleshy and fat, her cheek round and full, her features large and masculine, and behind the angle of the jaw was seated a tumor of this singular character : the skin was thick and sound, and altogether unconnected with the tumor ; the tumor was conical, and occupied exactly the triangular hollow behind the corner of the jaw, but it was a tumor which was neither very soft, nor very elastic, but receded like a loose, puffy, and unconstricted hernia, upon the slightest pressure : when it receded, you could pinch up a distinct and thick sac, which held not the slightest communion with the skin, or its system of vessels : the contents of this sac could be almost dissipated by pressure,

and no solid nor spongy basis could be felt at the deepest part of this sac, nor could the slightest degree of pulsation, or whizzing noise be perceived, when the fluid returned into the sac. The case so entirely resembled that of Peggy Hall, viz. a seemingly thin and serous matter, contained within a large and flaccid sac, that I entirely believed so. Although the characteristic of the almost total receding of the fluid was too marked, and particular, not to have excited strong suspicions ; yet, in opposition to Mr. Russell, and several respectable and judicious surgeons, I believed that it contained matter, and was confident, at all events, that there was no shadow of danger in making the experiment of puncturing the tumor, in opposition to their better judgment : I made a slight incision through the skin, and, with the point of a bleeding lancet, punctured the sac, and found that it contained actually blood, which seemed to ooze out into the sac, from innumerable small vessels, had no arterial pulsation, and no distinct character by colour or otherwise of being venous or arterial blood ; it had so little impulse, as to make not the slightest suggilation of the neck, at the place where the puncture was made, and healed like a vein opened in bleeding. I take a pleasure in mentioning this, both as it ascertains that often the sac is of great extent, and the transit of the blood from the arteries to the veins through the cells very slow ; that the tumor may be large, and truly an aneurism from anastomosis, without being characterized by pulsation ; and also as this little narrative may prove a warning to you, for the blood might have been difficult to restrain ! and the wound difficult to heal !



Drawn by J. Bell.

Engraved by E. Mit.

The character and history of this kind of tumor, especially when connected with the tortuous and in-osculating veins of the chin, neck, or thyroid gland, is sufficiently explained by these examples ; but there is something in the general aspect, and inevitable consequences of these tumors, when seated merely in the skin of the face, which I cannot allow myself to leave unnoticed.

The two sketches which follow represent other forms of this disease ; the first, No. 56, represents this disease in an aged countryman, where the tumor beginning in the face, and spreading over the cheek, had attained to the very unusual height of two inches above the surface, without pulsation, but with frequent hæmorrhage. The second, No. 57, is an interesting case of a young gentleman of Birmingham, who, neglecting the disease in its early stage, and rejecting the assistance proposed to him in the last stage of the disorder, perished by hæmorrhagy. On this case I had the honour of being consulted by Mr. Freer, of Birmingham, who, with great liberality, and many kind expressions, permits me to make any use of the case. This is an instance of the disease truly lamentable, as the tumor grew from a very speck, and at many periods of its growth might have been extirpated, with no other deformity than that of a scar, less conspicuous (I am sure it must have been) or disgusting than the tumor : its fatal conclusion from so trivial an origin may teach us to think and act with great decision in such a case ; since we alone, and not the friends nor patient, can foresee the issue.

LETTER OF CONSULTATION FROM GEORGE FREER, ESQ.
SURGEON.

“SIR,—The high opinion I have formed of your surgical knowledge has induced me to request your advice in a case of “Aneurism from Anastomosis,” which covers the whole of the nose, except the very lowest part. This disease, which has been nine years arriving at its present state, was at first a small speck, but now pulsates exceedingly. I should never have hesitated to extirpate this tumor, but from its occupying so great an extent of surface as that represented in the drawing which accompanies the case. It extends from the angle of one eye to that of the other; and, from the tip of the nose, it extends along the whole length of the nose, and an inch higher upon the forehead; and the arteries which run into the substance of the tumor, being sensibly felt approaching the tumor on each cheek, will require an extensive dissection; and, in a part where no skin can be safely spared, the wound and scar must be very broad and wide. The case of Mr. R. as in page 464 of your work, so accurately expresses every other circumstance in the character and symptoms of this disease, that I need use no other words to express what I see and feel in this case. The gentleman has been under my care but a few weeks, but the tumor bleeds from the surface on every slight exertion, and I am sorry to add, my patient has frequent hæmorrhages from the inside of the nose: whether there be any communication of the disease from the surface to the internal parts, I have no way of deter-

mining; but something must be done, and I am acquainted with no other cure than that of complete extirpation. Although somewhat alarmed at the thoughts of such an operation, I shall never shrink from my duty, and earnestly request your opinion upon the case: Will there be any danger from the branches of the ophthalmic artery, which must be greatly enlarged? or do you apprehend much from the ramifications of the facial artery inosculating with those on the inner surface of the nose? We have reason in this disease to fear that the smallest ramification will have attained an alarming size. Should business or pleasure carry you at any time so far from home as to visit Birmingham, to show you every possible attention will be a pleasure to,

“Dear Sir, yours respectfully,

“GEORGE FREER.”

“Birmingham, May 23, 1803.”

REPLY.

“I beg you will believe me highly sensible of the honour you do me in requiring my advice in a case not without its difficulties; and not unconscious of the value of the communication in every other sense: this narrative, and the drawing which accompanies it, must give me particular pleasure, not merely as a mark of your confidence and friendship, but as a professional communication especially acceptable to one, who has called the attention of the public to this singular disease.

“Every thing inclines me to consider the case deliberately, and to communicate, in return for your

confidence, whatever I imagine consolatory to your patient, and still more whatever may be encouraging or useful to you, in that delicate operation which seems to me inevitable. I have no fear of immediate danger, nor the slightest scruple in assenting to your opinion, "that something must be done," and in your hands I have no doubt it will be done skilfully, and, I trust, safely. Give me leave, my dear Sir, to say to you, in confidence and privacy, with my mind clear of the slightest taint of envy or malice, that I have seen much mangling among tumors, many operations undertaken with little forethought, and performed with proportionate ill success ; many precious lessons of surgery have I learned from such scenes, but which are lost to the public, because they are of a complexion that never can be disclosed. I am therefore sincerely anxious to see the issue of such a case treated skilfully, and I hope to write on the questions you propose so perspicuously, that, however slight the benefit you may derive from my suggestions, you will be sensible, at least, of my sincere and friendly wishes for your success, and will, in some sense, feel as if we acted in concert, as if I were present with you in your intended operation.

"First, I subscribe to your affirmation "that something must be done," because we have every assurance that reason or experience can give, that tumors of any kind rarely stop, or even relent in their growth, and tumors of this peculiar nature, never. That the increase of such a tumor is not only unremitting, but is progressive in a geometrical ratio, its progress being accelerated towards its latter period in an incalculable degree, so as to hurry on the fatal period very rapidly ;



SKETCH N:57.

Drawn by J. Bell.

Engraved by E. Mitchell.

and we are sensible, that the circulation is in the skin over all parts of the body peculiarly active, and the circulation of the head more liable than that of any part to occasional excitement. This particular tumor is fed by innumerable smaller arteries, which act upon every occasional excitement like those of the cheeks in blushing, with unusual energy : when once the pulsatory motion is manifest to the eye and finger, and the hæmorrhages begun, it is a sign that the case can no longer be neglected ; the arteries, veins, and intermediate cells, are incessantly enlarging ; the blood is accumulated, the solid matter attenuated, every slight impulse occasions a new hæmorrhagy : if the tumor be in any inaccessible part of the body, we must pronounce it fatal ; if in any part where we dare use the knife, we must do so without delay and without relenting.

“ Secondly, Notwithstanding the occasional hæmorrhages from the nose, I believe the operation may be safely attempted : I hope it does not issue from the diseased vessels, because, I believe, especially in this case, that the aneurism is merely a cutaneous disease ; this species of aneurism does, no doubt, affect the rectum, one remarkable case of which I have detailed ; the rete venosum, which surrounds the prostate gland, is often so affected : and I have attended several cases, in which the varicose veins had burst upon the internal surface of the bladder, filling it from hour to hour with blood, in place of urine, a disease which the patient seldom long survives, being at once enfeebled by the hæmorrhagy, and exhausted with want of rest, and by pain more poignant than that of the stone. Often this kind of aneurism affects

the surfaces of the stomach and rectum, occasioning in the former those vicarious hæmorrhages which so often usurp the place of menstruation, and terminate fatally ; and, in the latter, these hæmorrhages which are ascribed to internal piles, but which are so apt to terminate in ulceration and schirrus. There is no affection of the viscera, especially of the abdomen, more frequent than this, and none more fatal : but unless it be in a few cases indistinctly narrated, as in that related by Mr. Balfour in the *Edinburgh Medical Essays*, I cannot remember any thing, either in reading or in practice, to persuade me that such a disease can take place in the vascular texture of a bone, even in the medullary vessels of the long bones. But in the flat bones, especially in the small flat bones of the nose, I hold this to be quite impossible, and thence conclude, either that the hæmorrhages from the nose are accidental, proceeding merely from a consent, or synchronous impulse in the arteries of the internal membrane, or that if these hæmorrhages be a legitimate symptom of the disease, the nasal bones have been previously destroyed by caries, and the disease is gone so far, as that it will probably terminate soon in all the symptoms of cancer, so that no manner of operation can be of any avail.

“ Thirdly, To one direct question I must not forget to reply : I must declare, that I believe there is not the shadow of danger from the facial, ophthalmic, or any other arteries ; there is no danger but of failing to take the disease clean away, nor any thing to fear but that the wound will not heal, but continue to bleed ; I will venture to assure you, that neither the ophthalmic artery, where it emerges from the socket,

nor the facial, where it turns round the ala nasi, are sensibly enlarged : if these arteries were much enlarged, they must now be felt so ; but the ramifications, you will find, and not the branches, are enlarged ; the arteries of the tumor are formidable rather from their number than their size ; the throbbing, you will remark, is, in the moment even of its highest excitement, rather general throughout the tumor, than particular in any arterial branches leading to it : examine this circumspectly, and I believe you will find that I am not wrong.

“ Fourthly, I am loth to mention what I apprehend to be essential to the success of the operation, what I think you must do in justice to yourself or your patient : but you are aware, no doubt, that, in extirpating this tumor, you have to dissect away wholly and entirely the diseased skin from eye to eye ; from the cheeks to whatever extent the tumor is connected with the face ; and from the point of the nose, half way up the forehead, making all bare as if it had been torn off (like the scalp from the skull) by a fall, and that, in doing so, you must go down quite to the cartilage and bone, trusting that the cartilages and bones will be covered with flesh from their own substance, first, in form of bloody spots, then of granulations, then of condensed and continued vascular flesh, hardening finally into a cicatrix, like that of a scald or burn. Such an extensive cicatrix must be flat, puckered, shining, and unsightly ; but nothing sure can be more unsightly than the tumor represented in your drawing. I think proceeding thus, we may, with rational confidence, look for a perfect cure, but this we must do, or nothing.

“Fifthly, I am still more unwilling to say, for it is discouraging, that I fear you will not entirely succeed at first, but will need gradually to extirpate the remains of the disease: it seems to me that, cut how you will, your success will be but partial; “you will have scotched the snake, not killed it;” and as the great surface bared by your operations heals, you will observe certain points black with blood, and threatening to pulsate again; you will find them beginning to bleed, even while the wound is healing, and it must enter into your views to provide against this, not by any particular mode of operation, but by looking coolly on this partial return of the disease, clearing away these unsound parts by successive partial operations, and occasionally by caustic, in which you will be guided by your own discretion and judgment, and the good counsel of your friends and assistants.

“Sixthly, You will perceive that I do not so much apprehend danger in the moment of operation, as an imperfect cure. I have no doubt that the patient will lose more blood, though possibly in a less alarming way, by one spontaneous hæmorrhagy, than by the most tardy operation; the purpose of which is indeed to save loss of blood, by dividing the vessels at a time when the patient is surrounded by good surgeons, and faithful attendants; not when, by accident, the general tumor, or some part of it, gives way, no one being present to give him necessary help. In the time of the operation, the blood flows from individual arteries in their natural state, far from the tumor; spontaneous hæmorrhages, on the contrary, flow from the centre of the tumor, or some of its larger cells, in fact, from all the tributary vessels at

once. There will, I am persuaded, be no such hæmorrhagy as to endanger life, yet there will be much confusion probably, and considerable loss of blood. You must be accompanied with good assistants, and have agaric, sponges, and compresses prepared; the hæmorrhagy will be from general surfaces, and minute ramifications, rather than from visible branches which you can tie with the needle; and the wider you carry your circular incisions beyond the verge of the tumor, the more will you lessen the number of these branches. The bleeding then is to be prevented, not by taking up particular arteries, the ocular or facial branches, but by cutting wide of the pulsating parts of the tumor, and applying to the open surface slices of agaric, or dried sponge, supported by compress and bandage. I should imagine it a very vain attempt to look on the bleeding surface, in the time of operating, for individual arteries. Some degree of hæmorrhagy there may be, even after a successful operation; but were I, after extirpating such a tumor, to find the flow of blood so violent and so general from all the surface, as to require the application of sponges, I should be apt to believe (however wisely planned, or wisely executed the operation might be) that I had failed of my purpose, and that the tumor would rise, and pulsate, and bleed again, even before the surface were healed.

“ I hope, my dear sir, for your sake, and your patient's, that I have formed correct views of the nature of this tumor, and described whatever I imagine necessary or useful in the operation perspicuously; I wish you all possible success in this achievement, and to your patient all health and hap-

piness. Though it should never be in my power to avail myself of your polite and kind intentions, I beg you will always believe me desirous of being personally known to you, and remember me as one bound by this mode of communication in sentiments of mutual esteem and confidence, your friend and humble servant,

“ JOHN BELL.”

“ 9, George-street, Edinburgh,

“ June 25, 1803 *.”

* This gentleman declining every assistance, expired of hæmorrhagy ; and there is a spirit of liberality and politeness so pleasing in Mr. Freer's manner of giving me permission to make my own use of the case and drawing, that I cannot refuse myself the pleasure of transcribing his letter ; it was in answer to a request of mine, dated early in June, 1806.

“ My dear Sir,—I am ashamed to have so long delayed answering your polite letter, but hope you will feel no inconvenience from this omission ; I beg you may use the case in any way your judgment may direct ; I assure you it will give me much pleasure to read your further observations on this singular disease, and it was with regret I was prevented availing myself of your able opinion and counsel in regard to the operation, the patient choosing rather to die by repeated bleedings, than to submit to the pains and dangers of it. Since the time of my consulting you on this case, I have met with two cases of a like nature, seated in the lip ; both of them I extirpated successfully, and two years have elapsed without any return of the disease. I was indeed fortunate enough to inject one of the tumors with quicksilver, and have preserved the tumor, which seems to consist of a vessel, which I call an artery, conveying the blood to a sac containing a variety of cells ; and a vessel at the opposite end, which I also call an artery, forming a substance corresponding, in its general structure, with the annexed sketch (No. 58), which, if it help to explain my conception of the disease, will also, I suspect, intimate to you, that I am very little of a draftsman ; but I shall be satisfied if my rude sketch helps me out in my description. The tumor was suddenly filled by every bodily exertion, or even by sudden affections and passions : it pulsated strongly, and did not spontaneously subside, though it was easily repressed by the fingers. I mention these circumstances merely as an additional testimony to the truth of your description, and the propriety of your suggestions in regard to the early extirpation of such tumors. I cannot con-

You will observe, that I neither reckon the absence of pulsation, the irrepressible nature of the tumor, nor the want of turgid veins, any perfect criterion of there being no effusion of blood ; and I am least of all confident when the tumor occupies the vicinity of the thyroid gland. Often I find blood poured out in various parts of the body, either into sacs, or into cavities, or into cellular substance, without being matured into pus : mere inflammation, with some indisposition or weakness in the structure or actions of the part, occasions this ; and I am persuaded, that often in old sacs, when the blood continues fluid for months, or even for years, it is poured out by a sort of secretion, as the menstrual blood is secreted from the surface of the womb, and is circulated by a slow re-absorption which keeps it always fluid, though inclosed in a firm sac, from which you cannot repress it into the veins which are yet capable of absorbing it.

Among various examples of this general fact, some are cases of bloody effusion, where we can only by provident evacuations moderate that vascular action by which it is produced : others are cases in which we can, by obliterating the sac into which the blood is secreted, stop this source of local disease. Allow me then to illustrate those two states of extravasation

clude without assuring you, it will give Mrs. Freer and myself much pleasure to pay attention to you and Mrs. Bell, should you think of visiting us. Birmingham may boast of learned men, and ingenious mechanics, worth your knowing. We request you will make our house your home while in Warwickshire. With great respect,
yours, &c.

“ GEORGE FREER.”

“ June 18, 1806.”

by cases which, you will find, have, both by being singular and by being useful, a particular claim upon your attention.

By observing the various results of arterial action excited in an unnatural degree, and long continued, I have been able to prove to you, that arterial excitement in the arteries of the head is often followed by effusion of blood into the delicate substance of the brain, whose function, being proportionably affected, palsy ensues. The vascular excitement in any fleshy part, by causing effusion of a serous nature into its cellular substance, produces the phenomena of inflammation, as pain, redness, swelling; that, when urged into a state of intense action, the extreme vessels give way, and the cellular substance, and the circulating vessels, are choked with effusion of real blood; then the inflammation assumes a deep red colour, and gangrene ensues. That when, in the course of a moderate and continued excitement, the veins corresponding with the active arteries are dilated, the cellular substance makes also a part of the diseased structure, and either the common cellular tissue, or the extremities of the veins, become sacs, and receptacles of blood, through which the blood circulates continually, as through the body of the penis. But the effusion of blood, in consequence of arterial excitement, into the cavity of a delicate organ, such as the eye, or into a sac formed from the cellular substance, and such as more commonly contains a serous or purulent effusion, I have as yet only hinted at; I have mentioned that, during an epidemic ophthalmia, produced by the intense heats of summer, and often terminating in blindness, I could distinctly

perceive the vascular action within the eye to rise, by repeated exacerbations and distinct paroxysms, through all the degrees of disease, from that which is accompanied with heat, and pain, and intolerance of light, to intense pain, accompanied with slight delirium and beating of the temples, and at last to blindness, or utter destruction of the organ, that blindness being produced by a distinct and visible effusion of blood into the cavity of the eye. But the following narrative, in which you will find the same effusion arising in consequence of the most ordinary exciting causes, the blood effused, absorbed, and effused again fifty times successively, must be interesting to you, if it were no more than as a singular effort of vascular action, and not an accident likely to occur again : it adds strength to my former reasonings, and bears many striking analogies to other affections, illustrating, in an especial manner, what I have termed the “Apoplectic impulse.”

“Mr. — was confided to my care, by his surgeon Mr. Grant, who accompanied his introduction with a neat and concise statement of his malady*. Though

“ 14th December, 1806.

* “Dear Sir,—Permit me to recommend to your particular notice Mr. —, who labours under a very distressing affection of the eye. About three years ago, in the act of running violently, his sight became obscured ; and, on examination, the anterior chamber of the eye seemed half filled with blood. Violent exercise, or any thing that occasions an unusual flow of blood towards the head, is apt to excite this disease. He may have a dozen attacks in the year, according to his mode of life. When the effused blood is re-absorbed, a small quantity of coagulated lymph remains at the bottom of the anterior chamber of the eye. This coagulum has of late increased so much, that the under edge of the pupil is on the same line with it. When the attack commences, the anterior chamber of the eye is completely filled with the effused fluid, and

he was not in a moment struck blind of the left eye, yet in a few minutes, after violent running, his eye was so suffused with blood, poured out into the chamber of the aqueous humour, that the sight was first obscured, then extinguished; and his friends, when at his request they looked into the eye, could perceive the cause. That effusion, which was at the first produced by this movement of accelerated circulation, returned innumerable times, in consequence of various exciting causes, slight and violent, till at last it has become habitual and periodical.

“ Mr. A——, though not yet twenty years of age, is more than six feet high; and three years ago, when first he was struck with this singular kind of blindness, was growing so rapidly, that he actually believes he gained five inches in the year. He was then a stripling, and is now tall, slender, and delicate in his constitution, though remarkably well formed, and destined to become a strong and muscular man. Early in the month of September, 1803, on the day in which he was first attacked with this blindness, he

vision wholly obstructed. During the continuance of the complaint there is much pain, and also an intolerance of light. A rupture of the arteries of the iris would seem to be the cause of the disorder. The temporal arteries beat violently on the commencement of the hæmorrhage. I am doubtful if a complete cure be within the reach of the art; but I am persuaded he gives himself the best chance of this, by placing himself under your care. An operation may indeed remove the present coagulum, but will hardly prevent a renewal of the same process. It is a case which I have not hitherto witnessed, and should therefore consider it as highly obliging if you could find leisure to acquaint me, on Mr. ——’s return, with your opinion of the cause, and mode of treatment. I remain, dear Sir, with much esteem,

“ Yours very truly,

“ JAMES GRANT, Surgeon.”

“ J. Bell, Esq. Surgeon, Edinburgh.”

had his hair cut early in the morning, he ate very heartily a hurried dinner, when, a companion having called while he was yet at table, and proposed a party in a house at some distance, he went with him, and, being mere lads, and in a playful humour, his friend ran, and he pursued at full speed, for the space of three or four hundred yards. He instantly was sensible of his sight being dim in the left eye ; he disregarded, at first, a feeling which he imagined to be temporary ; but having arrived at the house, and sat down, he was alarmed to find his vision still more obscure, and turning round to those who were in company, he asked whether they perceived any thing wrong in his eye ? they said there was blood upon it ; upon looking into a mirror he saw the blood, found himself totally blind of the left eye, was assailed with dreadful pain : the bloody effusion took place, the blood became visible, and the vision was entirely obscured, in the short space of fifteen minutes ; then the violent pain began, a consequence, plainly, and not a cause, of the blindness ; and for ten days he continued entirely blind of that eye.

“ His vision was gradually restored, by the blood which had filled the whole of the anterior chamber of the eye subsiding below the level of the pupil : the blood was still visible in the lower part of the eye, and continued so for three weeks ; it gradually vanished, and the eye recovered its wonted appearance, except that, in the very lowest part, under the level of the pupil, there remained a little white matter, viz. the gluten of the effused blood. Such was the first attack of the disorder, from which he continued free for the space of six months.

“ In the month of May, 1804, one evening while sitting at supper, not conscious of any previous excitement, from violent exercise or exposure to heat, but probably affected by the supper, wine, light, and heat, and animated conversation, he suddenly perceived the obscurity coming over his vision, the blood again appeared in the chamber of the eye, which was next morning affected with violent pain : yet this was, in all respects, a less severe paroxysm than the first.

“ Little more than a month had elapsed, when having, in the warm month of June, gone into the river to bathe, he was in the act of swimming, and just when coming out of the water, struck with this obscurity of vision. The blood instantly came over his eye, which, on the ensuing day, was affected with most excruciating pain, extending to the temple ; but, in three weeks or a month, his sight was completely restored, and the eye had recovered its natural splendour and clearness. In the end of September, or beginning of October, he was again attacked, though he was conscious of no excess, and was quiet, regular, and discreet in his way of living ; he was seized while writing, and recollects no sensible cause to which the paroxysm could be ascribed, unless it were to the hanging of the head and straining of the eye. The sight was obscured, the blood appeared again in the chamber of the eye, the pain returned, the blood was absorbed again within the usual period, and the sight was in course restored.

“ It was on the first of November, in walking across the bridge at night, betwixt ten and eleven o'clock, that he sustained the fourth attack, but

without such total loss of vision, or so much effusion of blood as heretofore, and certainly the blood was not so long of being absorbed, nor was he so long obliged to cover the eye from the light : in eight or ten days he was able to uncover the eye ; the appearance of suffusion of blood was gone, but the lymphatic coagulum occupying the anterior chamber of the eye was manifestly accumulating. On the 3d of February, 1805, he had a like paroxysm, arising from very obvious causes : being a day of election of member of parliament for this city, his regiment was marched out of town to the distance of eighteen miles ; and, both in marching out to the temporary quarters allotted for his regiment and in returning, he walked along with the men, was greatly heated by the exercise, and very naturally refers this attack to a cause so expressly resembling that which first gave rise to his malady, that it could not fail to attract his particular notice. From this time," says Mr. A——, " these paroxysms became periodical, and seemingly spontaneous ; they returned once a month ; the eye was kept in a state of constant irritability and frequent pain, so that I was forced to have it constantly covered from the light ; yet no circumspection in this respect, nor in my habits of living, seemed to avail me. Of the few paroxysms which I am able to particularize, as arising from any obvious excitement, one was on the morning after our review, in the month of August last, when, after being in the field, we sat down to a dinner of ceremony, and drank late ; I must have exceeded, but am not conscious of having been intemperate. I went to bed, perhaps a little heated with wine ; I rose early in the morning, to go upon

guard, and, in the act of dressing, and especially in stooping to wash my face, I was sensible, at the instant, of the effusion of blood, and the return of the blindness." The second memorable occasion was still more particular in the circumstances, the excitement more marked than any, and explaining all the others. Mr. A—— had gone abroad to a supper party of young people, where a most unusual degree of hilarity prevailed, some very ludicrous songs were sung, and he joined the general mirth, and laughed immoderately and so long, that in the end he saw the candles dim, and, in a moment, found his eye quite suffused with blood.

This gentleman's disease has now taken a most decided form ; it returns sometimes once a fortnight, sometimes once a month ; seldom do two months elapse without a new effusion of blood, and it returns with a degree of regularity almost periodical. The sensibility of the eye is such, that he is obliged to keep it always shaded ; and each new effusion of blood is now followed by a paroxysm of pulsatory pain in the temple of that side, with an intolerable throbbing, something betwixt general headache and pain of the affected organ, a pain which is, in some degree, relieved by steady and continued pressure. Sometimes, as you will learn from the narrative, the excitement is sensible, and the cause of it such as in strict prudence he should have avoided, but is often too slight to be observed ; now the effusion returns always, or almost always, without an express or sensible cause, from a predisposition so strong, that he is come to a conviction, that laughing, crying, singing, running, swimming, stooping, excess in wine, or any

of those causes which have, at former times, plainly produced this effusion, would cause it instantly to return.

It must seem very surprising, that an organ so delicate as the eye should be able thus to sustain repeated effusions of blood, without having its structure entirely ruined ; but the resistance of its strong coats, filled and tense with its own humours, plainly has its effect in limiting the bloody effusion ; yet the additional tension is such, as occasions that violent pain which is excruciating even on the first, and at its acme, the second day after the effusion has taken place. That the extravasation is of pure blood, which keeps its properties unaffected by the dilution with the aqueous humour, is both sensible to sight, and proved by the solid white coagulum which each successive effusion leaves behind. The present state of the eye is this :—its form is in no degree changed ; if there were the slightest reason to apprehend any alteration of bulk or form, it is from the eyelid being drawn down, and that somewhat obliquely, over the eye, so as to cover much of the cornea, or coloured part, and exposing chiefly the inner side and lower part of the eye, where the coagulum lies. The blood of its proper purple colour obscures the whole ; the pupil is not to be seen ; the coagulum, which, in consequence of its bulk, is very thinly covered with the blood, is almost white, and occupies all the lower part of the anterior chamber of the aqueous humour ; occupies the space betwixt the lower half of the iris and the cornea ; covers some part of the pupil ; and has, I fear, irremediably injured the vision, which yet

is not extinct. But strict regimen, profuse evacuations, a seton in the nape of the neck, opiates to appease the sensibility of the eye, and an abstemious, quiet, and regulated course of life, will, I hope, prevent future effusions ; and when his growth is ascertained, and these paroxysms of local arterial action are abated, I hope that much of this coagulum will be absorbed.

Even the dilatation and contraction of the iris itself have been ascribed, by the celebrated Haller, to an influx of blood, from a sudden excitement of the arteries of the part, similar to the blushing of the cheek, or erection of the penis. But here we have evidence of a periodical accelerated action of the arteries of a part gradually widening its circle of excitement, till, from the arteries of the iris, or ciliary processes, the arteries, not only of the whole eye, but of the temple and side of the head, partake of the excitement ; a circumstance which the sympathy of nerves, and their influence over the arteries, sufficiently explain.

But I always reckon a case more useful in proportion as it approaches the more ordinary occurrences of practice ; and sacculated tumors on the throat, containing blood, are so frequent, and require such careful treatment, that I will occupy a small portion of your time in laying an example before you.

Miss A—— came from a distant part of the country, with a tumor encircling the whole throat, from ear to ear almost, and extending from the chin to the sternum. This tumor, the growth of several years, could not be a suppuration of the thyroid gland, for

there had been from the first no induration nor inflammation, but a sac containing a secreted fluid, increasing slowly in quantity, till the tumor covered all the trachea. This, like every other great sac, was far from being tense; it could be pinched up with the finger and thumb, so as to make the uncommon thickness of the sac very sensible to the feeling, and the fluid so distinctly fluctuated, and so easily from side to side of the tumor, as to convey the impression of its being like that of Peggy Hall, of a thin and serous nature; nor was there any other reason, except the peculiar seat of the tumor, to doubt of its being serum, or to apprehend that a tumor so old, and forming so slowly, could contain blood.

In the choice of means for obliterating so large a sac, occupying in a young lady the whole circle of the throat, it is most natural to incline to those methods which, if successful, are least liable to produce either a scar, or unsightly thickening, or any other deformity; but, in the present case, I could not but prefer the most decisive method of proceeding to those which seemed milder, for the following reasons. The flaccid state of the tumor was such as permitted me easily to pinch up the sac, and feel most sensibly that its walls were peculiarly thick and fleshy. I foresaw, that if such means only were resorted to as tend to obliterate the sac slowly, and, by successive paroxysms of inflammation, the muscular fascia of the neck, the platysma-myoides would be united by adhesion to this thick and fleshy sac. I feared, that if the walls thus constituted were kept long in an inflamed state, irritated, and thickening,

the thyroid gland would not entirely escape, but become inflamed and hard, so as to form a solid basis for the tumor; and I could not but recollect how much more apt the thyroid gland is to swell in the female sex. For these and various reasons, especially from my patient's intention of returning home, I proposed that method which, though it may be blamed as the most cruel, is often in truth the most lenient, by being the most effectual—I mean the passing a seton or syndon across the sac: but, from that timidity which carries with it such strong apologies, the method I proposed was unfortunately declined, and that of a simple puncture preferred.

Having called Dr. Monro into consultation, the propriety of opening the sac was decided on, from these motives:—First, the certainty of the sac continually increasing in size, deforming the neck more and more, and, perhaps, in the end, corrupting the cartilages of the larynx, and making its way into the trachea, and forming there such irregular suppurations and incurable fistulas as often prove fatal. Secondly, that there is no kind of motive for refraining from this very necessary act of duty, since the fluctuation is distinct, the sac circumscribed, the fluid not repressible; no varicose veins occupying its surface, no pulsation felt from within its substance, to make us fear its being supplied by any remarkable arteries.

It appeared to us, that if there was blood in the tumor, or hæmorrhagy in the operation, it could be only such as might distil gradually from the surface of so firm a sac, not such active hæmorrhagy as

might endanger life, or prevent the suppuration of the cavity*.

Upon making an incision through the skin and fascia of the lower part of the neck, and striking the lancet direct into the tumor, a thin bloody serum ran out, or rather pure blood, for it coagulated in the saucers, even before it could be turned from them into the basin. It expressly resembled that thin bloody secretion which I have so often seen run out upon making openings round the knee-joint, or in swellings when, in consequence of a shock or rude blow, blood of this dilute and serous nature is effused, as from the shock of riding against the pole of a carriage, &c. or in consequence of high and sudden inflammation; even after strains of the muscles without any external injury, I have seen such effusions of blood, and shall have occasion to relate some fatal cases of this nature.

In the evening, when the plug was withdrawn, the same thin bloody serum, instantaneously coagulating, flowed from the sac; and at each dressing, during the first four days, the fluid which was discharged seemed little different from pure blood; it was plainly a sort of secretion from the thick walls of the tumor; it gradually became less coagulable, then very thin and whitish, and ripened before the tenth day into pure and well conditioned pus, importing that the internal surface of the sac was in a state of suppuration, and inclined to heal.

* The opinion and descriptions are extracted from my case-book; the other circumstances of the case are not from recollection, which I never trust to, but from letters and memorandums.

Now the time of my patient's departure approached, and the seton, or long skain of cotton by which the sac was to be kept inflamed till obliterated, and the sponge with which the opening was to be preserved, had been long used, and those who were in future to manage them made familiar with their use. The former was lodged deep, and within the sac by the long probe; and the latter had been gradually enlarged, so as rather to dilate the opening in proportion as the cavity of the sac lessened. The gentleman who was to be intrusted with this part of the process was a party at each dressing, and I had no fear that all would go well; but my first letter from the country announced that the matter was foul, bloody, and foetid; the flow of it obstructed by fungus, almost closing the orifice; that the introduction of the sponge was become difficult, or almost impossible; and that advice was expected of me, which really could be of no avail without either my personal presence, or my patient returning to town. I was sensible that now the means I recommended must be resorted to, for (although it was not included in the description of all that was wrong) I was sensible that there must be a great thickening of the neck and throat from the induration of the sac. I found that much pressure and thumbing of the parts were necessary to discharge the matter, and that she had suffered from attacks of fever, accompanied with pain and swelling of the tumor.

By good fortune I was called into that part of the country, and found, when I visited this lady, the whole tumor condensed into a thick spongy mass,

inflamed over the whole surface, and spongy in its substance, in consequence of continual torturing and squeezing, while pieces of the sponge tent were suspected to lie buried in it : I actually encountered these lost pieces of sponge with the probe, and hooked them out ; enlarged the lower opening, passed the long iron probe obliquely across the throat to the upper part of the tumor, and examined how I might best cut it out. But this I found a more difficult and delicate operation than I had imagined, for the upper part of the sac lay under the left lobe of the thyroid gland, entirely under it, so that a considerable thickness of parts was interposed betwixt the probe and the skin, and it seemed impossible to cut out the probe without wounding the thyroid gland and some of its arteries. The best I could hope was by circumspection not to cut a large one ; I therefore felt long and circumspectly round the point of the probe, made an incision through the skin only, such as admitted the point of my finger, and with that feeling the mass of the thyroid gland, and being sensible that no large artery was under my finger, I dissected through it. The bleeding was so violent and alarming, that my assistant, a medical gentleman inured for forty years to all variety of practice, fainted, and forsook me. I could not go on to open the sac, for that would have left me without any surface to press against, or cut upon, if I should need to open the skin more widely, and take up an artery ; and had I opened the sac, the blood would have been admitted to its cavity : laying, therefore, a piece of sponge into the incision, and pressing it down with the thumb, I

allowed some time to elapse, and the hæmorrhagy ceased, so that I was enabled, in half an hour, to proceed and cut out the probe. Having passed it, I drew a coarse big seton across the sac, and left it there, with careful instructions how to use it, viz. by carefully shifting and replacing the cord ; by applying poultices outwardly, and slightly astringent injections inwardly, according to the state of the parts. Thus, from a mistaken lenity, the cruelty was still to do, and the thickening and deformity fixed and irremediable.

Recollect, then, in your future practice, that a tumor hard at first, and gradually softening into fluctuation, must contain matter more or less mature ; but that a tumor soft, even when very small, gradually enlarging, and having no stool, or basis, may contain blood ; that a tumor of this last description, seated on the fore-part of the neck, often does contain blood, though it is neither varicose nor pulsating. Beware, then, to make no rash opening without making this prognostic, that the tumor may contain blood, not matter.

Believe me, gentlemen, I am incapable of magnifying, by the manner of my narrative, any such trivial difficulties, as this of the thyroid gland and its system of vessels being interposed betwixt the knife and the probe : I mention these occurrences as lessons concerning little points of practice, which, without experience, you could never learn, and which, indeed, without careful notes of the trivial perplexities of the hour of visit, I should not have remembered to teach you.

But to return to subjects still more interesting : you will have observed that I speak of erosion and caries of the cartilages of the larynx as producing very dismal consequences, and as far from being unfrequent ; and that I allude to the possibility of blood or matter penetrating through the walls of a suppurating or sacculated tumor into the throat. These are accidents productive of such singular and fatal effects, that I choose rather to represent the mechanism of the disease by plans and drawings, than the particular symptoms of any individual case. You are aware of the complicated maladies which arise from the bursting of abscesses into the internal parts, from the rectum or pelvis into the urinary bladder, from the perineum into the urethra, from the belly into the stomach, or from the neck into the throat ; and, from the complicated functions of the throat, in breathing, swallowing, and speaking, abscess of the neck affecting those passages produces a strange variety of suffering*. I have remarked in practice

* An opinion is here expressed by my brother, which falls in with a common mistake, viz. that these abscesses form accidentally, and then communicate with the canals or tubes. This is not exactly the case ; the process is this : The cellular membrane, and especially the cellular membrane on the outside of canals, as those of the pharynx, rectum, and urethra, is the texture of the whole body the most prone to suppurative inflammation. So it happens, that when the mucous membrane of the passage is inflamed, the exterior cellular membrane partaking of the inflammation becomes the seat of abscess ; and if the inflammation should continue in the tube, not only the excitement to the secretion of more matter into the abscess is continued, but in the end ulceration forms a communication betwixt them. This process is taking place, uniformly, from the common quinsy to the most formidable and complicated fistula of the anus and perineum.

The reader's attention is particularly directed to the unfortunate consequences of these abscesses bursting into the pharynx and œsophagus, as described in the text.

several stages of danger and suffering, which I think it desirable you should be acquainted with : First, the suppuration which I am now going to describe seems to me of a scrophulous nature ; it begins without any sensible inflammation, it ripens insensibly, and extends and displaces the trachea and œsophagus without pain or any other disorder, except difficulty of deglutition ; it grows so very slowly, that the patient is no way alarmed, and the surgeon is not, at first, conscious of all the dangers of his situation. When first the surgeon's attention is called to the tumor, it has very generally attained to a great size, at once compressing the throat, and bulging out the neck. A diffused tumor is observed towards the lower part of the neck, below the place of the larynx, approaching nearer to the clavicle than the throat, occupying the interstices of the muscles, and capable, like a hernia, of being repressed behind the mastoid : the fluctuation of the matter is obscure, when the surgeon feels for it in the neck only ; but when he looks into the throat, he distinctly perceives a soft, uniform tumor pressing the tonsil and root of the tongue towards the opposite side, intruding upon the throat, obstructing the breathing much, but still more the deglutition : he is sensible that this is the upper part of that sac which protrudes in the neck below : by pushing his fingers into that side of the throat, he feels the softness and fluctuation of the matter contained within a large and flaccid sac ; and by tapping below, and feeling or looking, at the same time, into the throat, he is sensible that it is one great abscess occupying all the neck, lying deep under the muscles in the direction of the œsophagus, and what is more

dangerous still, of the trachea ; and, if he is as conscious as he should be of this danger, and as clear as these signs should make him of the extent and place of the abscess, he with his scalpel cuts through the skin in the lower part of the neck, dissects till he feels distinctly the sac and the fluctuation, and then plunging his knife or lancet into it, prevents the sad consequences of its bursting into the throat, by this timely opening in a dependent point ; by the pressure of the muscles, which, every time they turn the neck or move the throat, press the sides of the sac in contact, it is obliterated, though slowly, and the judicious use of injections and of syndons contributes greatly to the cure. I have more than once seen the throat surrounded on every side with these baggy abscesses, occupying the space under the angle of the jaw, and the two sides of the neck irregularly, so as to require incisions which it yet is always unpleasant to make : nor should the surgeon ever allow himself to make such incisions without that declaration, which may be so necessary to his own good repute, viz. that it is not impossible the tumor may already have communication with the trachea, or that air may issue along with the matter ; for often the abscess bursts into the throat with an opening so small, and of so valvular a form, that the abscess, imperfectly discharged of its contents, maintains its original form and size, while the slow issue of the matter from it only excites a slight and occasional cough.

Secondly. I have said the patient feels no pain, and the surgeon is unconscious of danger, when an abscess thus occupying the neck threatens to burst into the throat : the danger indeed is of a nature

which practice only, and not theory, could enable you to predict. While the disorder has not reached the throat, its effects cannot be imagined, so entirely is the simple abscess free from harm, or the appearance of harm—the displacement of the trachea, the uneasy bulkiness of the throat, and the difficulty of breathing and swallowing excepted: nor is it upon its first bursting into the pharynx that the ill effects of it are perceived: I remember one coarse country fellow, in whom two large scrophulous abscesses of this complexion had burst into the pharynx; but except a hoarse uncouth voice, and difficulty of swallowing, he had as yet no symptom which was not rather ludicrous than dangerous; for you distinguished the connexion of these abscesses with the throat, not by seeing any openings internally, or knowing by any mark that matter was discharged into the throat, but by the fellow blowing up the two bags at will, till they resembled the alforges of a baboon; and really when this resemblance struck you, you could hardly, on looking at his ill-shaved, grinning muzzle, think them at all misplaced. By making free openings on each side, and washing and cleaning the sacs, they were consolidated.

But when such abscess lies deep behind the throat, betwixt the vertebræ and the pharynx; when it is not sensible, nor can be opened outwardly, and ulcerates and bursts within, a sac is formed accompanied with a ruinous disorder of the structure and function of the part. Even before the abscess bursts into the throat, the larynx, or cartilaginous and only solid part of the throat is pressed strongly over to the opposite side; the arches of the palate betwixt which

(i. e. betwixt the anterior and posterior arch) the tonsil of each side is lodged are so pressed together as to adhere; the secreting surface of the tonsil is thus sealed up, and covered over by the adhesion, as if it had never been; and the membrane of the throat becomes flat and shining, its natural plies are obliterated, and the whole is smoothed into one level surface, till new constrictions and diseased folds and ridges are formed.

Thus, by the very first adhesions, the throat is straitened; often the arches of the palate are so fixed down by adhesions, that the whole opening from the throat towards the nostrils is closed up, as in the boy whose case I formerly mentioned; or is almost closed, leaving a small slit-like opening, like the slit in a poors'-box, as in the disease of which I have a preparation. Now there is a perpetual regurgitation of the food and drink, with such a sense of suffocation, accompanying every attempt to swallow, that the eyes stare in the head; the air is admitted into the abscess, and the matter into the trachea; the tickling cough is incessant, the expectoration endless, the fits of real asthma very frequent. The admission of the air and food into the abscess mixing with the pus gives a pestilent foetor to the breath; and those functions of speaking, breathing, swallowing, which go on in the natural state of the parts without consciousness, or any sensible efforts, are now a perpetual struggle, and if the patient can at all survive, it is by being careful to swallow little drops of fluid, and little morsels of nourishment, with that caution which is absolutely necessary to prevent suffocation, which yet

often fails, and then severe struggles and suffocation come on.

During the progress of the disease, the thin matter of the abscess is streaming into the trachea, while the coughing and straining support a perpetual state of ulceration : the whole inside membrane of the throat is thickened ; that glandular surface surrounding the root of the epiglottis, and named, from its natural aspect, *caro glandulosa*, is thickened and exulcerated ; the mouth of the glottis has its lips so thickened, that it is no longer flexible nor patent ; and the back of the pharynx, if it be not hidden by the adhesion of the arches of the palate, is ulcerated, grows fibrous and stringy, like the *chordæ tendineæ* of the heart ; the muscular strings which cross it in every direction are red and ulcerated ; and the reticulated interstices filled with pus, which you see sometimes oozing out from larger ulcerations and cavities. These are changes of structure which occasion a very protracted scene of suffering : the patient walks with his chin resting on his breast to relax the ulcerated throat ; his usual breathing is slow and difficult, accompanied with a lifting of the chest and shoulders, a raising of the eyelids, an anxious contraction of the features, and a hissing and stridulous noise ; he is perpetually clearing, or attempting to clear, the thickened and encumbered trachea coated with mucus, and this action is so incessant, that it seems necessary to his breathing at all. The voice is whispering, and when forced degenerates into a sort of screech : the arches of the palate, while they contract and close over the tonsils, adhere also to the

Eustachian tubes, so that the hearing is almost lost, whence the patient, in conversing with you, always turns his head and lays his ear to hear you. His breathing is habitually difficult, so that the blood is driven into the head, and he passes much of the day and all the night in a lethargic stupor, each fit of anxious breathing being followed by oppressive headache and increasing stupor. He rises during the night in asthmatic paroxysms, and exposing himself to an open window, finds a slight relief, and, returning again to bed, falls into an apoplectic stupor, from which, even at mid-day, he is roused with difficulty. At last, becoming truly apoplectic, he, in some unusual paroxysm of asthma, runs to the window, throws open his neck and breast, grasps at something for support, and, no longer able to sustain the struggle, he falls into a fit of stupor, his head drops forward, his limbs relax, and he falls down and is found dead. This is the dreadful conclusion of the scene where the slow thickening of the internal membrane of the throat, and especially the induration of the glottis, is the cause of his death.

Thirdly. I know not whether this labouring and dreadful condition, much as I have sympathized with those who have died so, is the worst, for often the disorder is more complicated by big and capacious sacs of matter bursting into the throat; and the death of the patient, though less lingering, is more terrible. When a great abscess is permitted to undermine all the cellular substance of the throat, and surround the œsophagus, there are no limits to the number of openings; it bursts at various points into both œsophagus and larynx; the openings into the

tube are as various and perplexing as those around a diseased urethra ; and it is as difficult to find the true passage, so as to convey nourishment to the patient. The openings are large, oblique, and valve-like, and often surrounded with strings of indurated fibres, resembling the openings in the auricles of the heart : these mouths of the abscess are as large and open, to receive whatever of fluid or solid the patient tries to swallow : the food and drink pass sometimes into the trachea, sometimes into the sacs, sometimes it regurgitates with great violence by the nostrils, going, in short, in every direction but down the natural passage, which, being fleshy, collapses, while the slits in the solid larynx, or cartilaginous part of the throat, present themselves to receive the morsel, or a part of it ; and the bag, when distended by food or drink, or air thus pressed into it by the action of the throat, compresses the œsophagus. Where there is less of general ulceration and thickening of the membrane, and the sac compressing the œsophagus is large, the patient is rather starved than suffocated ; he retains all his faculties, makes every effort to receive food, he falls into fits of suffocation only when he tries to drink, and actually dies of famine. His condition gives a greedy, eager expression to his features, and a wild and hurried manner in all his actions ; he wishes for food, yet knows he cannot swallow ; he has an irresistible desire for drink, but, when he endeavours to pour it down, it is rejected by his nostrils : the struggle for breath continues long after each attempt to swallow, and shrinks up his features into a rigid grinning form ; his shoulders are raised, his lean and skinny hands sprawling and

extended, his visage is pale and meagre, his nostrils dilated, his forehead wrinkled, high, his eye-balls staring from their hollow sockets, the angles of his mouth retracted, and the viscid saliva, which he has not power to swallow, distils in strings from his mouth. Such is the dreadful condition to which a patient is reduced by that ignorance and indifference to slighter signs of disorder, which is so common with the vulgar, or by the surgeon allowing, for fear of danger, any deep-seated abscess to burst thus into the throat.

Even after the tumor has burst into the throat, it is not too late to cure the abscess; it seems to me that a dependent opening will, by emptying the sac, prevent those disorders which only long continued ulceration and complicated openings occasion.

“ James Ogilvy, a man of middle age, has a deep scrophulous abscess occupying the right side of the neck, displacing the trachea, and pointing in the throat: how long it may have existed he does not know, but six months ago it became very prominent, especially towards the lower part of the neck, affecting his breathing and swallowing, yet that very slightly, and accompanied with no sense of uneasiness nor pain; but soon after, however, the tumor appeared in the lower part of the neck, it became painful, and, about four months ago, the swelling began to be felt in the mouth; this stage of the distension was accompanied with violent pain. Since then the swelling has increased continually, though slowly; the swelling in the lower part of the neck is diffused, soft, and colourless; within the throat, in the fauces, it appears large, soft, fluctuating, equably

convex, and apparently filling the whole of the pharynx: the pain is gone, but the respiration is affected, deglutition extremely difficult, and the abscess is so tumid, that you would expect it to burst immediately, and widely, into the pharynx; indeed, although the abscess thus preserves its convexity, I cannot but be persuaded, that there is already a partial opening betwixt the horns of the os hyoides, and those of the thyroid cartilage, at a point where we cannot see the ulcer. I am persuaded of this from the incessant cough and perpetual discharge of matter: he has a hectic visage, and a fretful pulse, and the circumstances of the abscess admit of no delay.

“ On the 25th of July this great abscess was opened by an incision in the lower part of the neck, and nearly three pounds of thick yellow pus were discharged: the neck flattened, the respiration and deglutition became easy, and the internal swelling, viz. that which appeared within the throat, disappeared: the abscess was carefully washed out with injections, and every care taken to keep the cavity of this enormous sac clean, and to support the patient's strength, and prevent fever.

“ But it rarely happens that so great an abscess is opened without hectic: the discharge was very profuse and thin, his pulse rose from eighty to a hundred and twelve, he complained of great weakness, and had night sweats, while his skin was burning hot, and his tongue white: the fever continued with little abatement for ten days; for eight days more it continued increasing, so that his life seemed endangered, but as yet we were not conscious of any other

cause than the great extent of this abscess and the profuse secretion of pus, when suddenly the abscess within the throat, which seemed to be emptied through the incision below, but had only subsided, burst into the pharynx ; then his anodynes procured him rest, the bark sat pleasantly on his stomach, his food nourished him, his appetite and strength increased every day ; the discharge, which now became very moderate, sometimes almost ceased at the external opening, and then totally ceased from the abscess of the throat : at last, at the end of six weeks, he was permitted to retire to the country to live on milk and take gentle exercise, with every prospect of a perfect cure."

But this is a piece of pathology which deserves to be described with all possible care, and in every form ; I will therefore explain to you what the patient suffers in the last and fatal stage of this disorder. That the condition of the poor creature whose case I am now to relate was miserable to the last degree will readily be conceived, by remarking the disordered condition of the pharynx in the preparation before me, which I first of all describe, because it will connect the phenomena of the disease with the disorders of the organ. In this dissection of the throat, the tongue is divided about one-third from its edge, so as to throw the tongue, larynx, and epiglottis over to the left side, and display the diseased pharynx down to the opening of the trachea : the small segment of the right side of the tongue is suspended by a thread twisted round one of the grinders. All the walls of the pharynx are in a diseased and constricted state ; we see that cord or straitness, which, though now on the level of all the

rest of the surface, was once the limits dividing the mouth and nostrils ; it was the anterior arch or line of the palate, from which the uvula hangs : the uvula is now a diminutive caruncle, and hangs from the point of the velum pendulum : the opening left betwixt the nostrils and the mouth, or top of the pharynx, is like a slit, and no bigger than to permit a farthing to pass into it edgewise ; the arches of the palate, and the velum palati, or soft and moveable palate, have both adhered so to the back of the pharynx as to seal down the tonsils, and the face of both tonsils is so covered by this adhesion, that even the place where the tonsils should be is not to be perceived ; and the adhesion of the arches of the palate is so complete, as to leave only the slit-like opening. Now to demonstrate the disorder of the œsophagus, observe the relation of parts : the cut surface of the thyroid cartilage, or great cartilage of the larynx, is divided, and the ring of it spread out to show the glottis or epiglottis ; the opening of the glottis is not very distinct, its lining is exceedingly thickened, and pursed together ; the epiglottis rises like a little tongue, or valve, over the glottis, and is connected with the root of the tongue, so as to move along with it, and consequently to flap down upon the glottis, when the back of the tongue is curled up to throw the morsel into the pharynx : the edge of the epiglottis, thickened by inflammation, is curled inwards. Behind the angle where the thyroid cartilage is cleft in two are seen the diseased walls of the œsophagus, where white and shining cords, tendinous and hard, mark the place and manner in which the parts are constricted by long continued ulceration ;

and through various long and valve-like slits are introduced bougies, which pass down into the sac of an abscess, that lies chiefly on the right side behind the œsophagus, and by the side of the larynx : this abscess had penetrated into the larynx *, as well as into the œsophagus, but for the resistance of the great cartilages ; and even these are eroded, and to speak truly, carious throughout, giving way at many points ; but into the pharynx it has penetrated by many successive ulcerations.

This preparation displays much devastation among parts the most essential to life, but of which only a little part was visible during life ; for only the hole or slit, the remains of the opening of the palate, was visible ; the ulcerated openings from the abscess into the pharynx lay opposite to the glottis, and so far below the root of the tongue, as not to be seen or even suspected in any other way, than by the catheter (when we attempted to pass it into the œsophagus) slipping into these slit-like openings :

* My brother had not seen, at this time, such a variety of cases of diseased larynx as have come under my observation in the course of practice. But the disease hinted at here is very common. The larynx is the seat of inflammation in a scrofulous person : at first, the inflammation is in the inner membrane ; then abscesses form around the larynx. These are very distressing, and threaten suffocation. If they burst into the larynx, the danger is increased, and the paroxysm of suffocation terrible. When they open by an ulceration near to the exquisitely sensible margins of the glottis, a crowing and difficulty of breathing is inevitable ; and the patient, if not relieved by operation, is suffocated. Sometimes the cartilages of the larynx become dead, and suffer a kind of necrosis. The dead bone in the centre of the cartilage is a continual aggravation of the disease. The disease in the larynx so incessantly irritates the lungs, and at the same time that the lungs are distressed, there is such a coughing up of blood and matter, that the patient's complaint is very apt to be mistaken for phthisis pulmonalis.

the mechanism of the throat was entirely ruined, and the larynx, irritable even in its healthy state, was kept in a perpetual irritation and struggle, in a state of asthmatic constriction at all times, and in a state of absolute strangulation upon the slightest attempt to swallow. The effects of every attempt to take down food or drink may be easily imagined from the relation of the parts; for, first, the glottis and epiglottis, the parts which should be in perpetual motion to prevent accidents in swallowing, were stiffened by ulceration and thickening: secondly, the opening of the pharynx into the œsophagus, by which the food should descend into the stomach, was distorted and obstructed, both by the pressure of the abscess behind, and by the cartilaginous part of the trachea, the larynx, being drawn continually backwards by the stylo-hyoidæi muscles, in the incessant spasms of the whole throat: third, the valve-like openings of the abscess or abscesses (for abscesses appeared during life to occupy both sides of the jaws and throat) presented themselves more directly than the openings of the œsophagus, receiving every morsel of food or drop of fluid. The mechanism of the throat was so changed, that the more violently the efforts to swallow food or nourishment were excited, the more effectually was the purpose defeated, for, when the whole force of the throat, tongue, and muscles of deglutition was exerted to force down the morsel, the œsophagus received not a particle of what was destined for the stomach, the whole force therefore of the muscles of deglutition was spent in injecting the sac of the abscess with the food or drink. The sac, large and capacious as it was, soon filled; and

no sooner filled, than it effectually compressed the œsophagus ; the food or drink then ran over into the trachea, and, by the effort which this instantly excited, the contents of the bag, along with the last mouthful of the fluid, were ejected through the nose. It was in this condition, in the last stage of his malady, that I saw this wretched man : he was meagre and staring with famine, his belly clang to his back, his skin to his bones ; his face was squalid, lean, and yellow, his voice hollow and rattling, his grey eyes sunk in their sockets, the eyelids and skin of the forehead raised and wrinkled in deep furrows : whenever he moved he was in danger of suffocation : the slightest attempt to swallow was accompanied with a struggle which he seemed hardly capable of surviving : his skinny hands and sprawling lean fingers were perpetually extended before him, as if ready to catch at something for support, when the strangulation came upon him : he had neither strength nor voice to tell me the date nor the cause of his sufferings, and, though the abscesses on each side of his jaws, extending along the neck, varying in their state of fulness, and bulging upon every attempt to swallow, explained his condition in part, yet in honest truth I mistook, at first, the slit-like opening for the way into the œsophagus, till I found that, in place of admitting the lithotomy staff which I used as a probe to pass downwards into the pharynx, it only entered when turned with the point upwards towards the nostril. Satisfied and instructed in this point, and knowing part of the disorder, viz. that the arches of the palate had closed and adhered, I sought the passage downwards, and having passed the flexible

catheter into the œsophagus, I poured down by the syringe a basin of warm beef-tea, the first meal he had enjoyed for a long while, and which he acknowledged to be very grateful. But neither this first operation, nor any subsequent one, was easy ; I knew nothing precisely concerning the ulcerated openings leading into the sac : often when the catheter seemed to pass into the œsophagus, it plumped into the sac, its point was resisted, and it was only by its stopping short thus, that I was aware of the tube having missed the pharynx ; upon such occasions I withdrew it, to try again for the true passage : the catheter was always passed two or three times before it actually entered the œsophagus ; it was only when it passed easily and quite down into the throat that I durst venture to pour in the soup : sometimes it went into the opening of the larynx, and, though instantly withdrawn, excited such a suffocation as was very alarming. I fear that the pupil to whom I intrusted the passing of the catheter and the nourishment of the patient had actually failed, and concealed his own awkwardness from me : I cannot but reflect with self-reproach on my own remissness in not passing the catheter regularly myself : but, I believe, this complicated disorder was quite incurable ; the poor man grew more ghastly in the visage, and weaker every hour, and, while we were engaged in contriving how the sac might be opened, or what should be done, he expired on the fourth day.

I have now narrated much of what I have seen or done in tumors of the head and throat, diseases always dangerous in their tendency, by affecting respiration and deglutition, and in which we must

often decline operating, from their roots being entangled with the great arteries and nerves. Often when I have seen a patient dying in a miserable and lingering manner, I have wondered that no other means of extirpation has ever been proposed than that which the knife affords, nor any design invented, by which tumors might be forced to suppurate. To express such a thought implies that a scheme of this nature has presented itself to my imagination, such as, I think, may be successful : it is so ; but being yet untried, I am bound to submit the following suggestion to you with diffidence, and to mention it without much detail, and with becoming modesty and reserve.

Tumors refuse to suppurate when their substance is peculiarly solid, disease having obliterated the cellular substance of the part : tumors also are difficult to extirpate ; and often, in consequence of a hurried, bloody, and imperfect dissection, much of the disease is left behind, because successive inflammations have hardened or filled up the cellular substance which surrounds the gland, and consolidated it, as it were, into one mass with the surrounding skin and flesh : but could we venture to inject the more solid tumors, so as to restore by moderate violence the cellular interstices among its integral parts ; or could we surround and insulate an apparently immoveable tumor from its manifold adhesions, by an injection which would pursue whatever remained of the *tela cellulosa* from cell to cell, we should perhaps attain this desirable end, of forcing the one species of tumor into a state of suppuration, and disengaging the other from the surrounding parts.

What is it peculiar in the texture of a tumor that prevents suppuration? what is the character which implies that it is capable of being resolved?—a stony hardness, and extreme specific gravity, indicating that the cellular substance is quite obliterated, that there is no interstitial substance to receive those secretions which are by time matured into pus : thence it is that in glands indurated to this degree, schirrous as they are named, vascular action being excited by a blow or fall, and accompanied or relieved by no secretion, occasions only pain, ulceration, partial gangrene in each bursting part, and a thin and watery ichor, which is itself an animal poison. The blow-pipe forced into any tumor would, by successive attempts, form those interstices, and injecting the part with oily and camphorated solutions, would force suppuration in the diseases of the salivary, or thyroid, or lymphatic glands, where no operation could be attempted ; and, in tumors even of the mamma, it might be advantageous to disengage the part by such injections as would throw all the surrounding cellular substance into suppuration ; the part itself, incapable of suppuration, would thus be insulated, and might be turned out like a kernel from its husk. Such spontaneous suppurations of the surrounding cellular substance, and such happy deliveries from a desperate disease, we have witnessed many times ; and what I have now proposed, though not without many difficulties and objections, is too strong in analogies not to be worthy of some degree of notice. I know not how any tumor could resist this practice : what dangerous consequences could ensue ? none worse than such suppuration. Gangrene, or slough-

ing, as it is called, when thus local, would be limited to the cellular substance and skin, and the operations of inflating or injecting a tumor for the purpose of suppurating or of unrooting it could be conducted with such prudence, and, being of the nature of an experiment, would be attempted by such gentle degrees, as would save us from self-reproach, or the misery of doing harm where we intended good.

I have read somewhere of an expression, which often returns upon my ear, "Examples are eloquent;" I have ever found them the most precious lessons, and been at pains through all my life to record them with care and precision: our reasoning on every professional question, and our proceedings in every new case, must be regulated by precedents, and I have laid before you such examples, and deduced from them such lessons, as you will not despise, for they are the fruits of experience. Of all professional questions, that concerning the nature, tendency, and future consequences of a tumor seems to me the most solemn: the physician or surgeon may but too easily rid himself of the importunity of a patient afflicted with a dangerous tumor, for if he will but pronounce any projected operation fatal, the patient will retire from public view, mourn over his helpless and miserable state in solitude, and die a willing martyr to an opinion, and to the too natural abhorrence of pain, and the fear of expiring at once from loss of blood.

[I should regret saying any thing which might weaken this appeal, or prevent the reader fully comprehending the force of the aphorism, to extirpate tumors early, and to do it root and branch. I should

be sorry to deprive the patient or the humane surgeon of any hope in desperate cases, such as we have held out to us in this conclusion. But I fear my brother had a notion that tumors were more simple in their texture than they really are, and that they had more resemblance to each other than they will be found to have.

I must remain of opinion that a tumor is a disease that accumulates and builds up a peculiar structure ; that it has its type or character from the beginning ; that its course is appointed like the regular changes of the natural body, perhaps not so uniform in its progress ; delayed often and remaining inactive ; but, though its activity be suspended, its disposition is permanent.]

OF THE ANEURISM FROM ANASTOMOSIS*.

THAT kind of aneurism which I venture to name aneurism from anastomosis, resembles those bloody tumors which appear in new-born children, occupying chiefly the lips, cheeks, eyelids, or hairy scalp, and which grow in process of time to an important size, bursting at last, and bleeding furiously, so as to oblige us to cut them out.

The disease which I am now about to describe arises, not from any such natural deformity, but from various and hidden causes; it often begins in adults, increasing from a trivial pimple-like speck to a formidable disease. This aneurism consists in a mutual enlargement of the smaller arteries and veins. I should call it cutaneous aneurism, were it confined to the skin, or aneurism of the hairy scalp, if it were peculiar to that part; but it is an accident which affects indifferently all parts of the body, and brings on complicated diseases even among the viscera, not less frequently than on the surface of the body.

This tumor, which I call aneurism by anastomosis, is a perfect aneurism. It arises from some accidental cause; is marked by a perpetual throb-

*This chapter has been transposed and classed with tumors, because it is a disease proceeding from a peculiar action, building up a peculiar structure, and because it is not a tumor of arterial blood exclusively.

bing ; grows slowly, but uncontrollably ; and is rather irritated than checked by compression. The tumor has only a sort of trembling or indistinct throbbing at first, but when it is fully formed, it has a continual, distinct pulsation ; it beats strongly upon every occasional exertion ; it swells up in spring and summer with a fuller and more active pulsation ; it beats powerful in the time of menstruation ; and by the incessant pulsation and occasional turgescence, it forms among the cellular substance, or among the dilated veins, sacs of blood. These little sacs form apices and tender points, which become livid and very thin, and burst from time to time, and then, like other aneurisms, this aneurism pours out its blood so profusely, as to reduce the patient to extreme weakness.

If the patient seldom die of this disease, it is because the aneurism being seated usually in the skin, and being tender on its surface, these hæmorrhagies are foreseen, and easily controlled. But to what extremity of weakness the patient may be reduced by these successive hæmorrhagies, I shall presently explain.

I believe I speak modestly enough when I affirm, that this disease has been far too little noticed. It presents itself everywhere in an infinite variety of forms : the surgeon, not aware of its nature, performs only very imperfect operations ; he makes partial incisions ; his patient bleeds profusely ; he is confounded with the unusual appearance of innumerable arteries, small, indeed, but bleeding with intense impetuosity, which nothing but a firm compress can stop. A firm compress is accordingly applied, the

hæmorrhagy is repressed, the aneurism closes and heals again ; again it begins its pulsations, distends, and bursts, and bleeds from month to month ! the patient is exhausted with loss of blood, till at length his constitution and health are in danger of being entirely destroyed.

When from fear or ignorance we perform such partial incisions, we soon find ourselves in danger from its former nature : “ We’ve scotched the snake, not killed, and it will join and be itself again.” The return of such a disease (though doubtless the fault of the surgeon) is the reason why such a tumor is often most unhappily pronounced a cancer ! an incurable disease !

It is not without reluctance and diffidence that I venture to use a new name, and a hypothetical one, yet I know of no word by which I can truly express the character of this tumor, except by this word—aneurism from anastomosis. I have cut round about such tumors in the living body, and dissected them out ; I have seen others cut into the substance of those tumors in the way of operation, thinking perhaps to obliterate some dilated veins or some particular artery ; and finally, I have dissected and observed such tumors after they were extirpated, and cannot be entirely mistaken in regard to their nature. The tumor is a congeries of active vessels, and the cellular substance through which these vessels are expanded, resembles the cellular part of the penis, the gills of a turkeycock, or the substances of the placenta, spleen, or womb. It is apparently a very simple structure that enables those parts (the womb, the penis, the spleen) to perform their functions,

and it is a very slight change of organization that forms this disease. The tumor is a congeries of small and active arteries, absorbing veins, and intermediate cells. The irritated and incessant action of the arteries fills the cells with blood; from these cells it is re-absorbed by the veins; the extremities of the veins themselves perhaps dilate into this cellular form. There seems to be a perpetual circulation of blood, for there is an incessant pulsation; the tumor is permanent, but its occasional variation of bulk is singular; it swells like the penis in erection, or the gills of a turkeycock in passion; it is puffed up by exercise, drinking, or emotions of the mind; it is filled and distended with blood upon any occasion, which quickens the circulation, as by venery, menstruation, the pleasures of the table, heated rooms, or the warmth of the bed. This tumor beats continually, increases slowly; its surface bursts; it bleeds from time to time; its pulsation and hæmorrhagies give it a title to rank with aneurisms, and its internal structure is such, that I may venture to name it “Aneurism from the Dilatation of Anastomosing Vessels.”

I find that the vessels in this disease seem to increase in number by increasing in size; large arteries are, as it were, generated in parts where they were not known in the healthy state. When this continued and irritated action of the vessels is once fairly begun, the tumor works for itself, the circulation being occasionally highly excited, while each paroxysm of excited action not only enlarges the tumor for the time, but causes a permanent enlargement. Every active artery encourages, supports, and urges on

another to increased action, and multiplies the sources from which the cells and vessels of this mixed aneurism draw their blood ! It is the frequent communication and anastomosis of vessels one with another that makes every inosculating branch tributary to this active group of vessels.

Such is the influence of the anastomosis, or communication of vessels, in generating, supporting, feeding, augmenting this tumor, that I know of no name so proper as this of aneurism by anastomosis, to express its nature : nor indeed can any thing in the structure or economy of the vascular system account for the peculiarities of this tumor, its regular increase, its impetuous bleeding, or its intense pulsations, but this, that it receives the force, not of one or two principal arteries which lead towards it, but of innumerable small branches into which those larger arteries are divided, and which in their turn inosculate with other arteries still smaller and more distant, so as to bring in blood from all sides, and to possess infinite sources of blood. The activity of the group of vessels in the centre constitutes the main disease ; and though you interrupt, by ligature, all the more conspicuous branches which lead to it, that central group, while it continues active, will have blood.

This aneurism, in its beginning, is extremely small, it is a mere speck of disease ; but it is a portentous one. I have reason to believe that it sometimes originates from so slight a cause as a tight hat or a trifling bruise ; it frequently begins in adults, in pure, hale, and sound skin, where no spot, nor mark, nor tendency to disease had ever been observed. The marks which children are born with are often super-

ficial stain-like spots, which never change, except that their colour becomes occasionally deeper. But sometimes those spots are also defects in the substance of the skin; they are a species of aneurism, or they create a tendency to this disease; and from almost imperceptible stain-like spots, not elevated above the surface of the skin, they grow to dangerous bloody tumors, which require extirpation.

In both diseases, viz. of connate aneurisms appearing, when the child is born, in the form of a small livid tubercle! and of those forming spontaneously or arising from a blow, the process of their growth and increase is the same. When a set of cutaneous vessels first enter into this diseased action, a few of the extreme arteries in the skin itself are originally in fault, and commence an increased action, which draws the arteries of all the adjoining parts into sympathy with them; the arteries behind them convey more blood and push it on rapidly; these larger arteries begin to feed the disease, while the central group thus supported by the arteries behind, acts powerfully, the tumor begins its pulsations, and, like a punctum saliens, forms vessels, as it were, by enlarging those small branches which were not visible before. The little arteries work powerfully and are dilated, the corresponding veins are proportionably enlarged, the number and activity of those arteries and veins are slowly increased. This increased circulation solicits more blood towards the tumor; and while the central branches impel their blood with greater rapidity, the trunks they come from follow up that action and work so as to keep them full. It is thus that the small arteries work upon their cor-

responding veins ; the trunks in their turn work upon those smaller arteries ; action follows action, and indeed it were as impossible for the arteries of a part to act powerfully without drawing into consent and sympathy all the adjoining vessels, as for the heart to be enlarged in disease without a corresponding enlargement of the great veins through which it draws its blood.

Thus we have reason to believe, that the doctrine of derivation and revulsion is not so great a blunder in physics as was once supposed. It is true even in a system of rigid tubes ; but its influence in the active arteries of a living body is very great. Wherever increased action and quick circulation begin, blood will follow ; and wherever the circulation is thus hurried and irritated, the vessels, and the cellular substance surrounding the vessels, will enlarge. This is the reason why menstruation, passion, wine, and other excitements have such influence over those tumors ; and it is the reason why the increase of such tumors is as sure and uniform as the regular growth of the body. This is the reason why, when in the scalp (where many arteries of equal size inosculate very freely) any tumor of this kind begins, the disease spreads from artery to artery till the whole scalp is studded over with small aneurismal tumors, throbbing and enlarging till the surface of the scalp is as irregular as that of a varicose limb, and its substance like a pulp of extravasated blood *.

* We had a patient in our hospital whose head was covered from the brow to the neck with a succession of aneurisms, smaller and larger, some like beads, and some very large. Schenkus relates such a case in the following terms :

In women, the phenomena of these tumors are very remarkable; the hæmorrhagy from them usurps the place of menstruation; the action of their vessels is as regularly periodical as that of the arteries of the womb. The state of menstruation is a state of general excitement, and the particular action may be turned off towards any set of vessels, as those of the stomach, nostrils, or lungs. The excitement of menstruation affects the breasts; it is felt through the whole system; its effect on every tumor is remarkable! and I am daily provoked at seeing cancers, even of the breast (which is always peculiarly affected), and other tumors which actually rise and fall with each menstruation, extirpated without the smallest regard to the menstrual period, though the change at such a time upon every tumor is such as the most ignorant observer might remark. The disease which I am now explaining, this aneurism from anastomosis, consists in the increased action of certain arteries; and the menstrual excitement, and the local action coinciding, cause periodical pulsations, periodical enlargements of the tumor, periodical hæmor-

Capitis arteriæ, a vertice ad occipitium usque cuidam in tantum dilatatæ intumuerunt, ut varicum speciem repræsentarent.

Intumescunt interdum arteriæ, et fiunt in illis veluti varices, quod tamen raro accidit: nam ob duplicem tunicam, quam duriores habent et crassiorem, et ob sanguinem tenuem, quem continent, renituntur, et non ita facile dilatantur. Vidimus tamen Alexandrum Boscollum, civem Florentinum, cui arteriæ capitis a vertice ad occipitium adeo tumidæ erant, ut viderentur varices in gentes: pulsabant autem vehementer cum tangebantur. Venit hic pisa ut curaretur à Gabriele Falloppio: qui magno cum apparatu sectionem pollitus, cum manum jam inciperet admove, perterritus magnitudine tumoris curatione supersedit: veritus ne homo vitam cum sanguine redderet ille autem cum ejusmodi defectu diu vixit. Vide Vidus Vidius, Part II. sectio 2. lib. 6. cap. 14. Medicinæ.

rhagies, and a bursting of the tumor at each menstruation, which alternations I have known continue for many years.

Thus I find it necessary to appeal to that doctrine of inosculation which I have formerly delivered. I am persuaded that you will feel the necessity of some theory to connect in your own mind the phenomena of this disease, whose anomalies are such as must be left to your own ingenuity to explain. I have endeavoured to settle the character and distinction of this singular species of aneurism, and after having initiated you into the theory of this disease, I shall proceed to relate, in the first place, a pure unencumbered case.

Mr. R——n, a young gentleman of about twenty-five years of age, had an aneurismal tumor upon his forehead, which had been growing for seven years. It began with a small spot like a pimple, of the size of a pea, and was, when he consulted me, of the size of an egg: there passed along the centre of the tumor the scar of an operation which had been performed about a year before. Nothing could be more singular than the circumscribed form, strong pulsation, and various peculiarities of this aneurism. Nearly seven years before, he had first observed a small pimple-like tubercle rise on his forehead (which had hitherto been smooth and sound), which was seated close upon the eyebrow, and was so small and so little troublesome, that he believed it to be a pimple merely; ascribed it to the tightness of his hat, and disregarded it for some time. When he consulted a physician of very excellent abilities, Dr. Cleghorn of Glasgow, that gentleman ordered gentle physick,

and other trivial prescriptions, in perfect confidence that it would disappear ; for, at this time, it was of the same colour with the rest of the skin, had no character of aneurism, and was so little troublesome, that it was for a long while after entirely disregarded. But when it had attained to the size of a sparrow's egg, he thought he felt pulsation in it at times,—he began to be alarmed ; and when, at last, he resolved to consult a surgeon, the pulsation was manifest ; the surgeon recognized it as an aneurism, and advised that it should be cut out ; but not with that earnestness which is necessary to persuade a patient, who seldom has at first a serious impression of the nature or consequences of such a disease. Mr. R——n advised, or rather talked, with others, but in so careless a way, that he began to be himself indifferent about the tumor ; was easily prevailed upon to believe that if it increased at all, it must be very slowly : this little tumor seemed at first to have arisen merely from a tight hat, and he was easily persuaded to hope that it would go away.

One gentleman directed him to try compression, and, accordingly, a plate of lead was bound firmly down upon the tumor : he suffered the pain of this pressure with great constancy for some days, and for several weeks he continued a less painful degree of pressure ; but finding the aneurism beating more powerfully, foreseeing no good effect, and irritated with the constant and ineffectual trouble of supporting the pressure, he threw away the bandage, and let the aneurism grow as it pleased. This was about seven years ago. During five years had his tumor continued to grow, when the nature of it being no

longer equivocal, and the consequence of allowing it to increase much to be feared, it was resolved to perform the operation. There is every apology for the theory which the surgeon had imagined of this tumor, for its form was very singular. It was seated immediately over the eyebrow, and was about the size of a small egg; it lay exactly in the course of the frontal artery. The small orbital artery was found entering into the lower end of this oval tumor, while a branch of the temporal artery, remarkably enlarged and tortuous, went curling along the temple, and passed also into the upper end of the tumor. No other vessels, neither arteries nor veins, could be traced to it; but these two arteries and the intermediate tumor beat in concert; the arteries beat much more powerfully than in their natural state, and the tumor had a very powerful throbbing. This tumor, which became turgid whenever the pulses beat strong, seemed to be merely an enlargement of the frontal artery, as in the accompanying figure, and under this

The supposed dilatation.



apprehension was the operation arranged as follows :
—The surgeon first made an incision in the lower part of the tumor, and passed a ligature under the orbital or frontal artery; but when he had tied this

artery, the pulse of the aneurism was nothing abated. He next made an incision along the temporal branch, where it ran into the upper part of the tumor, and tied it also with a ligature, but in vain ; the pulsation of the tumor was still unaffected. It was then necessary to operate upon the tumor itself ; it was opened its whole length, and bled very profusely ; one ligature only was used—that ligature was struck with the needle into the centre of the tumor, where there was one artery larger than the rest ; but from all the surface besides, there was one continual gush of blood ; the hæmorrhagy was repressed, and the wound bound up with a compress and bandage. The tumor, in short, was thoroughly cut open, but it was not cut out. It healed slowly ; the ligature came away with difficulty. After a fortnight, the patient was left to dress the wound himself ; he felt distinctly, before the wound was healed, that the pulsation had begun again ; the pulsation became very strong, and the tumor, by the time the wound was actually healed, had attained the full size it had before the operation ; it was, indeed, rather larger than before.

But it might easily have been perceived, that this could not be a mere dilatation of the frontal artery, for the tumor was some thousand times the diameter of that artery. The pressing the point of the finger upon both arteries stopped their pulsation, but did not, in the slightest degree, affect the tumor ; and since the striking a needle and ligature under each artery did not affect the pulse of the aneurism, it was plain that the tumor was of such a nature as to draw its blood from a variety of sources, and that

it was necessary, not to cut it open, but to cut it out.

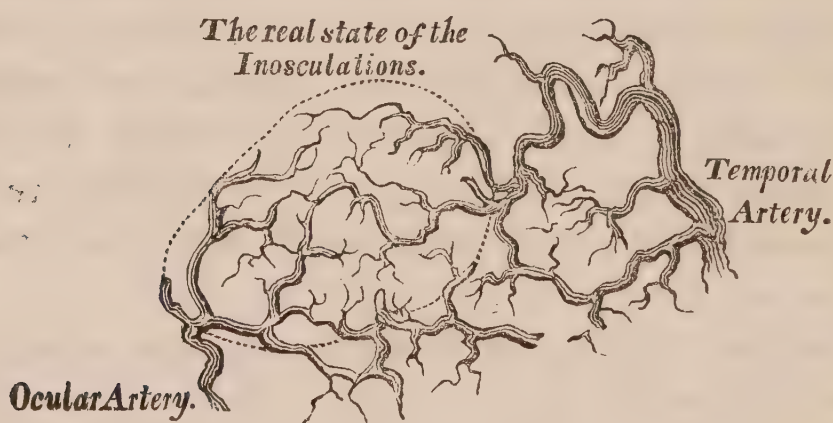
For nine months longer the tumor was suffered to grow unmolested. When Mr. R—— first desired my advice, the character of the tumor was very strongly marked.

It was very protuberant from the forehead, of a regular oval form, about the size of a small hen's egg. The scar of the former operation, about three inches long, ran across the centre of the tumor. The tumor was not purple on its surface, like the flesh spots of children, it was covered with a firm and sound skin; the scar was white; the rest of the skin was of a deep red, from inflammation, and not from the blood appearing through it; its throbbing was exceedingly strong, and of late it had become very painful, so that he was in fear of the bursting of the tumor, or the corruption of the bone; it was from the pain, which had of late been considerable, that he was inclined to ask advice, or to submit to a second incision. The notes taken at this period, in relation to the appearance, size, and pulsation of the tumor, are as follow :—

The lower artery, the ocular, which comes from within the orbit, is very large, and is felt entering into the lower corner of the tumor; the temporal branch is very greatly enlarged, is remarkably tortuous, pulsates with great force, so that I am surprised it has not wrought out other aneurisms near this first one. He wears his hat quite off his face; when his hat presses upon the tumor, it increases in size. When he runs, when he is heated, when he stoops, when he breathes hard, it increases in size,

and its pulsations are very strong. When he drinks spirits or wine, it swells, pulsates, assumes a deeper tinge, and every person at table can perceive the change : and when I handle it rudely, it swells up ; and when he chooses to retain his breath, it is inflated like the gills of a turkeycock. It is only for ten days that the throbbing pain has been remarkable, but that pain increases ; and as it runs backwards along the course of the artery, it is, by compressing the artery, in some slight degree relieved.

The nature of this aneurism is expressed in the accompanying figure, in which are seen the ocular artery, with the dilated and tortuous branch of the temporal artery, and the manner in which those arteries spread before they enter the tumor, and anastomose with various other branches. Were this



aneurism a mere dilatation of one artery, it should be emptied at once by compression, and the continuing of that pressure should prevent its being filled again. But when it is compressed firmly, it yields very gradually, as if the veins received its blood ; the compressing of its two great arteries does not prevent its filling again ; you are able to suppress their pulsation,

but the aneurism still pulsates, it throbs from the bottom, it rises very gradually when you cease from pressing, and soon fills to its full size ; it seems to receive its blood from one knows not what sources, from small arteries which cannot be perceived. The sudden inflation of this tumor, like the gills of a turkeycock ; its various fulness, according to the season of the year ; its falling in autumn when the blood is low, and its rising in the spring when the circulation is rapid ; the variations of it in respect of fulness, and its colour varying according to the degree of turgescence ; its sudden puffing up upon taking wine or using exercise ; its slow subsiding, and yielding in some slight degree by pressure ; and its being so little affected by compressing the great artery which feeds it, are sufficient indications of its nature. All this proves, that it is a tissue of small arteries and veins ; it fills not like a varix, slowly ; there is, indeed, no dilated vein to be seen near it ; its filling is by distinct throbs ; it is filled by its small and numerous arteries, and its swelling is (like the erection of the penis) produced by the pulsations of the arteries, stroke after stroke, pouring out their blood into the cells.

With this view of its nature, I was sure that it was a kind of tumor which was not to be cut open, but to be cut out. Dr. Jeffrey, and Mr. Cooper, surgeon in Glasgow, had the goodness to assist me. I tied this rampant temporal artery before touching the tumor, that it might be once more ascertained how little this interruption of any one artery could affect such a tumor. The pulsation of the tumor was nothing af-

fect; I knew by this what sort of an enemy I had to deal with; I knew, that if I cut within the active circle of this tumor, I should have innumerable branchings of the artery to tie up; but that if I cut wide where the arteries were undivided, and before they had formed their anastomosis, I should have to deal with but one or two. I disregarded the bleeding; I knew that I had no means of saving blood but by making the operation rapid. I made an oval incision which comprehended about a fourth part of the surface of the tumor; dissected the skin of each side down from it rapidly; I went down to the root of the tumor, and turned it out from the bone. The tumor was a perfect cellular mass, like a piece of sponge soaked in blood; it was tolerably solid, and dissected out very clean, in the form of a regular tumor; it bled furiously during the operation—that I had resolved to disregard; but the moment the tumor was turned out, there was not one drop of blood; the surface was clean, the pericranium quite bloodless, the lower artery stood wagging out of its hole in the orbit, and I held it with the hook while Dr. Jeffrey tied it. The upper tortuous artery was also tied; the eyebrow, which was divided exactly in the middle, was brought nicely together; the incision healed in ten days; the wound has been now two years healed, and the scar is small, reddish, and very little perceptible, and the two extremities of the eyebrow, which were two inches distant in the time of the operation, are perfectly close.

But there are varieties of this disease, which nothing but a variety of cases can explain; and one

consideration should give us a particular interest in investigating its nature ; that if neglected, it becomes incurable, and when it is incurable, I think it cannot fail to be in time fatal. It becomes incurable, when having been operated upon with a partial incision, instead of being extirpated, it is but irritated, and grows till it spreads its roots among the adjacent parts. It becomes incurable when it occupies a great extent of skin : it is an incurable disease when it affects any of the viscera. One phenomenon of this disease, I think, is very remarkable ; often in the course of this disease various sacs are formed, which receive sometimes serum and sometimes blood, according to the state of the tumor, so that tumors of this kind sometimes burst like a ganglion or great salivary tumor, discharging a thin serum like saliva. There is also another singularity—that always, in women, the rising and falling of this kind of tumor has a curious connexion with the menses, and the regular and monthly hæmorrhagy from this tumor frequently supersedes the menstrual discharge.

This kind of aneurism sometimes grows in the limbs, and to a very remarkable size ; bleeds profusely, and reduces the person to extreme weakness, and yet is easily cured ; for the rule which I have laid down gives you a perfect command of this aneurism. You must not cut into it, but cut it out. If you merely cut into it, the hæmorrhagy is terrible, and the cure imperfect ; if you cut round it, and at a little distance from its root, in place of the profuse hæmorrhagy from numberless arteries, you have but a slight bleeding from one or two, which are extremely small.

A tumor of this kind, which had grown to a remarkable size, and done infinite injury to the constitution of the patient, was extirpated by my friend Mr. Harkness. The history of it is as follows :

“ Jean Smith, a house-servant, about thirty-nine years of age, had a tumor upon her arm of a very singular appearance. It was seated exactly over the middle of the triceps muscle, on the back part of the arm ; but the disease belonged merely to the skin. The tumor had a very firm fleshy basis, and a sort of dead and throbbing pulsation through the whole thickness of it. The tumor had something of the appearance of a scrotum, with an enlarged testicle. It was about eight or nine inches long ; the walls of the tumor were very thick and fleshy ; there seemed to be a sac, or rather many sacculi within the tumor, but quite flaccid. The tumor hung down flabby and pendulous ; it was of a livid colour, as if it contained blood, or the remains of blood ; where it was not blue like a vein, it was mottled of a deep red, or lakey colour. This tumor had burst often, and poured out prodigious quantities of blood ; and at the place where it had burst, and especially at one point where the blood had always of late been poured out, the surface of the tumor was covered with thick white scabs, as if the bleeding orifices had been plastered up.

“ The history of the tumor was singular. It was about eighteen months before, that there had appeared a small purple spot upon the back of the arm, which soon grew into a tumor. The tumor enlarged slowly, and had, in the course of five months, attained to the size of a hen’s egg ; then, for the first

time, it burst, and discharged a great quantity of blood. The blood was red and florid, and thrown out with great impetus ; but it stopped of its own accord. It increased in size from this time forward very rapidly, and in four days more it was thought necessary, by the surgeon in the country, to open the tumor. This was done by incision : there had been a sac formed, even at this time ; a great quantity of coagulated blood was taken out ; the hæmorrhage was very profuse from the whole surface, but no particular artery was seen. No vessel great or small was taken up ; the hæmorrhagy was stopped with flour, firm compresses, and bandage. The wound was healed, the tumor grew, and, from the size of a hen's egg, it increased in a few months to its present dimensions, of eight or nine inches in length, and six or seven in breadth."

But this incision never healed entirely : a succession of scabs formed upon that part of the tumor, and from time to time the blood burst out from it on the slightest accident or injury ; and most infallibly the hæmorrhagy returned at every menstruation.

Her menses continued regular : at every menstrual period she was sensible of a heat, pulsation, and swelling in the tumor ; at each menstruation, blood burst out afresh from the central opening ; she lost immense quantities of blood, but still the menses held on their regular course, and flowed in due quantity.

About three weeks before she came under the care of Mr. Harkness, she had her menses : the blood again flowed in the usual quantity from the tumor in her arm. The blood burst out again from her arm just

two days before this second operation was performed. The bandages which had been kept firm from the time of the last hæmorrhagy chanced to be loosened and thrown aside; the blood, on the day of menstruation, and just two days before the operation, burst out impetuously, and she lost no less than four pounds of blood*.

OPERATION.—This hæmorrhagy was so dangerous, and implied also something so peculiar in the nature of the tumor, that Mr. Harkness very prudently called together a full consultation, especially of the older surgeons. The tourniquet was applied; the foul cloths and tight bandages were taken away from the tumor. It hung like a thick and massy bag half empty. Mr. Harkness did not set about the operation without a degree of apprehension, nor were the gentlemen who were convened to see the operation without fear of a very troublesome hæmorrhage. Mr. Harkness went round the base of the tumor with two strokes of his knife; he separated the tumor very rapidly; when the tourniquet was slackened, there was not the smallest hæmorrhage; the place where the tumor had been remained almost clean of blood; one small artery bled smartly, and was taken up with the tenaculum. Those who had seen the alarming hæmorrhagy of the preceding day were astonished, while those who saw the tumor for the first time, and had been called together as to an important case, were almost offended to find themselves so formally summoned to attend on an occasion of so little danger†.

* At this time she had begun to have considerable pain in her arm.

† Upon dissecting this tumor, I find it like a placenta, stringy,

A tumor in a part like this, though imperfectly cut, is still curable; had it extended itself, even along the whole arm, it might still have been cut away. But a tumor of this nature, seated on the head, or about the jaws, and mangled with an imperfect incision, becomes exceedingly dangerous: it is long before a person who has submitted himself to an unsuccessful operation will expose himself to another attempt, which, in particular circumstances, is not altogether safe.

Mr. N—— had a child born to him at the full time, very strong and healthy, but with a small dimple or spot upon the right temple, of a livid colour, flat, more like a stain than a tumor. It was about the size of a sixpence, and totally void of pulsation. But this portentous spot, when the child was about a twelvemonth old, began to change its nature. It rose more prominent in the centre, it was like a small berry, purple, soft, and very tender; and upon the slightest touch it would bleed, not like a fretted sore, but very profusely like a vein: even the ruffling of his nightcap burst the tumor. The parents were kept in unceasing alarm, lest it should burst during the night and bleed the child to death. They watched him with incessant care, and had a compress and bandage, with a piece of lead in it, always ready, and with which they repressed the bleeding.

The child was about a year old when the tumor began to bleed, and the pulsation began in it about the same time; and when he laughed, or cried, or

cellular, consisting of a confused tissue of small arteries, veins, and cellular substance, like the substance of the placenta or of the womb.

coughed, or struggled with his feet and hands, the tumor suddenly puffed up with a perceptible motion. At such times, the slightest touch made it bleed, and in the moment of bursting out, the blood flowed in a full stream, which often darted to the distance of a yard.

This state of anxiety the parents endured patiently for four years, when the tumor was greatly extended : it now covered two inches or more of his temple ; the pulsations, when the boy was vexed or heated with exercise, were very strong, and the bleedings were frequent and very profuse ; so that the child was at times quite blanched with the loss of blood. But he was now grown up to strength, and they resolved to submit their child to an operation, not to remove a deformity, but really to save his life.

A surgeon of very considerable knowledge in his profession performed this operation ; I assisted him, and had an opportunity of seeing the nature of this tumor, and the effect of cutting into its substance. The appearance was very singular indeed. A sufficient number of needles, tenaculums, and hare-lip pins were provided, not one of which can in any such operation be of the smallest use. The incision was made directly along the middle of the tumor ; the first incision was accompanied with a gush of blood, as if a bag of blood ten times the size of this tumor had been cut into. The blood continued to rush out impetuously ; we were all covered with it, and the child struggled very violently. The operator then cut down into the centre of the tumor ; he cut quite down to the bone, hoping to come at some great vessels which fed the aneurism, and the two

sides of the tumor were now held apart with hooks and forceps to let him use his needles. The appearance was very singular, and must have been very confounding to a person who began the operation with any hopes of finding one or more remarkable arteries. For, although the tumor, before the operation, was easily flattened, as if it had been a mere dilated vein or some sac of blood, there was in truth no sac, great nor small; the whole substance of the tumor (even in its very centre, and under the point where it was most particularly livid and thin) was perfectly cellular. The substance of it was cellular, stringy, and expressly resembling the corpora cavernosa penis; it was uniformly cellular, and singularly firm; those cells were filled with blood from the arteries: the arteries entered into the tumor in all directions, so that no pressure could command them; and the little arteries being all cut directly across in the centre of the tumor, bled each of them from both ends; seven or eight small arteries bled from the opposite sides of the tumor; the streams of blood, which were very smart, crossed and intersected each other in every direction; the arteries bled absolutely like the spout of a watering-pan, while the dark and dense blood of the veins run in a full stream down the face, choking the boy while we held his head firm upon the pillow.

The needle was struck under one of the largest arterial mouths, but without effect; it was now easy to foresee that ligatures could be of no service: the corner of a sponge being cut into a proper shape was thrust down into the incision, and supported with compresses, and fixed with a bandage. There

was some reason to hope, though very slight indeed, that a tumor which had been so thoroughly opened, might be gradually destroyed by caustics. The gentleman who performed the operation continued for many weeks to use, in various ways, the caustics, compresses, sponges, and the bandage, but all in vain ; the tumor, even before it was healed, had acquired its former size, and the moment the bandages were relaxed, it swelled again. While they were continually occupied with the cure of the sore, and applied the bandages night and day, the aneurism was no doubt prevented from bleeding ; but no sooner was the boy allowed to go to play with his companions and little brothers, than it burst out again ; it bled now as profusely as ever ; many a time they were alarmed for his life ; the bloody scenes that passed for two or three years were very distressing to the parents.

This boy is now ten years of age, of a fair complexion, healthy and active ; the hæmorrhages are less frequent ; he has lost no blood for these three months, and his father is flattered with the hopes of the disease changing when he comes to a certain time of life ; but this cannot happen ! The tumor is increasing so much, that it now covers four inches of his cheek ; it is widening its basis, and the basis is growing more and more solid. When the boy runs, cries, or laughs, it rises very high, beats so as to be seen at a considerable distance ; and he says, that when the master leaves the school for a moment, and the boys make a noise, it beats terribly, and frightens him very much ; and that when he is playing at hide-and-seek, it beats so that he is frightened at it !

In examining this aneurism, now at the distance of five years from the operation, I find the temporal artery and the transverse artery of the face enlarged, and running into the tumor at the upper part and sides ; but upon putting my finger into his mouth, and feeling the whole thickness of the cheek, I am not sensible of any remarkable artery entering from that side. When I press the tumor with the palm of the hand, I find that I can flatten it almost entirely ; it is repressed by slow degrees, it rises again very slowly ; but before you can count two hundred, it has risen to its stationary size. It is only when I tickle his sides, and make him laugh immoderately, that I can see it of its full size, or perceive its pulsation. This boy's aneurism is manageable still, but in a little while, I fear, it will cease to be so ; and when puberty arrives, I am apprehensive there will be a very unfavourable change.

When such a tumor is seated among the viscera, or in any inaccessible part, it must be an incurable, and in the end a fatal disease.

“ A young woman about twenty-five years of age, who was bred a milliner, lived a sober, quiet, industrious life, and is now married to a young man, a carpenter, of respectable character. When she was about nineteen years of age, she had the influenza, and felt all the weakness and languor which succeeds that disease. But it left behind it a more lasting malady ; for soon after the influenza was gone, she began to feel a degree of uneasiness towards the rectum ; then she became sensible of a tumor ; and when it was first examined with the finger from the vagina (for this tumor lies in the middle betwixt the rectum and

the vagina), it was about the size of an egg, soft, puffy-like, yielding like dough to the finger, and having a very sensible pulsation.

“ This tumor seemed to grow very slowly ; but the more she was obliged to conceal such a disease, the more was she alarmed ; she felt it beating within ! she was sensible of its being enlarged in sultry weather ! she was sensible of its being affected by menstruation ! she felt it beating very strongly when she got warm in bed ; it kept her awake with fear and anxiety, and its pulsation was at all times alarming. During its slow growth, it has given her little pain, except when going to stool ; for the fæces are always long delayed, and she passes them with difficulty ; she has been always costive, and often much pained.

“ She was married about three-and-twenty years of age, i. e. about five years after the commencement of this disease. The growth of this aneurism had been hitherto extremely slow ; but when, in the second year of her marriage, she fell with child, the midwife, who was early consulted on account of this alarming tumor, could observe a very sensible and rapid increase ! and in the moment of delivery, the tumor was pushed, in some degree, before the head of the child. As a first labour, her delivery was naturally slow, but the tumor had no share in causing this lingering labour ; it was partly compressed, partly protruded before the head of the child. She was safely delivered, and the tumor retired again, and she recovered in the usual time, though the appearance of such a tumor greatly alarmed her midwife and friends.”

The tumor is plainly this aneurism by anastomosis. I have observed it in various states, and can give a very full account of its condition.

While this tumor lies still within the pelvis, it seems to belong to the walls of the rectum; it lies betwixt the rectum and vagina; but its chief bulk is towards the left side, where it lies broad and flat against the side of the pelvis, resting upon the branch of the os ischium. The firmest part of the tumor is felt towards the verge of the anus, and towards the left side of the rectum. Upon introducing one finger into the rectum, and the other fore-finger into the vagina, the tumor is felt betwixt them, throbbing very powerfully; upon examining deliberately and long in the vagina, you can observe, that the whole of the tumor is in some degree compressible and soft; that it is throughout irregular, knobby, and glandular-like; but the knobs are not hard. In the interstices of those knobs, it feels soft and doughy; the soft parts allow you to press your finger deep betwixt the knobs; the knobs themselves are in some degree painful on being pressed. But while the head of the child was passing, the tumor could be seen, at least the lower part of it; and it seemed to range along, from the lower part of the labium to the left side of the anus, protruding the verge of the anus and the inner surface of the labium. The lower hæmorrhoidal arteries, and the great pudic arteries, are the chief vessels in this aneurism; but there are others of still more importance; for while you feel, by introducing the finger, a powerful general pulsation, you feel, by examining carefully with one finger, first, two or three long arteries, pretty large and tortuous, running

along the walls of the rectum and vagina, towards the left side of the pelvis, and plunging into the substance of the tumor ; and by pressing the finger deep betwixt the knobs, little arteries can be felt creeping betwixt the knobs.

The nature of this disease I need not now explain ; the consequences of it, God knows ! These notes of the state of the tumor I took five years ago ; since then, she has had a second child, has had but poor health, is of late fallen very low ; and her husband has called to beg that I would visit her, on account of continual heavy pain, want of rest, extreme weakness, and a hectic disposition ; and now, partly from weakness, partly from low spirits, she lies almost continually in bed. I find the aneurism remarkably increased in size ; but it is quite concealed within the pelvis.

We cannot now be at any loss to explain, what has hitherto appeared incredible, viz. the cases related by old authors, of the best credit, of pulsating spleens, the throbbing of whose arteries could be easily felt through the cartilages of the false ribs ! Which of the viscera should be so liable to this disease as the spleen, where the most careful investigation of physiologists has discovered nothing except a rapid circulation of blood, for purposes which they have never been able to divine ? In the spleen, there are large arteries and numerous veins, and intermediate cells perfectly regular, receiving and actually containing the blood ; the structure of this organ is unlike that of any other part of the body, unless, indeed, it resemble that of the penis, or placenta, or of the pregnant womb, or this unnatural structure, this very disease which we

are now describing. Tulpius describes a man's spleen as pulsating so strongly, that, like a violent palpitation of the heart, it could not only be felt, but heard. The patient was a poor labouring man; and Tulpius one day going to visit him, along with Henricus Salius, a physician, they both heard the pulsation of his spleen* at the distance of thirty feet, and that so distinctly, that they could count the pulse as fairly by the ear as by the finger †.

* But with all this there is a pulsation in the epigastrium, powerful, and like an aneurism; where, on dissection, there is neither apparent disease of the great arteries or the small ones, neither of the aorta or of the spleen!—C. B.

† “Et quidem tam distincte: ut numeraverint non semel singula verbera, et admota manu etiam coram terigerint, quoscunque, ferientis lienis, ictus.

“Quorum reciprocum sonitum, equidem memini, cum Henrico Salio Medico Ultrajectino, satis distincte audivisse, licet id temporis ab ipso recessissemus, ultra triginta pedes.” TULPIUS, p. 139.

That an enlarged and pulsating spleen is not inconsistent with the economy of the circulating system has been just explained. If it should be thought rather surprising that every enlargement of this viscus does not pulsate, and that ague cakes do not appear in this form of pulsating spleens, let it be remembered how much the spleen is indurated in those cases, and its pulsation repressed by the additional quantity of matter, and by the schirrous hardness which takes place. I have no doubt that the theory I have suggested will be found fully as satisfactory in explaining the fact of a pulsating spleen, as that of Tulpius, who attributes the return of this man's ailments to fits of the atra-bilis, under which he laboured. “And the atra-bilis,” says Tulpius, “and the vital spirits, and the arterial blood, being obstructed! strive with one another! so as to move easily even the heavy and enlarged spleen, and make it beat against the ribs; all which we can very well understand, by the analogy of other confined spirits! what they can do, when opposed, may be easily imagined, from the examples of thunder! and cannons! and chestnuts roasting in the fire!”

If I reckoned it a matter of great importance to establish the fact of a pulsating spleen, I should neither give this translation nor the original of this curious piece of philosophy, which is not very honourable to Tulpius, or rather to the age he lived in. “Excitati itaque fuere hi ictus, cum a motu atræ bilis: tum a spiritu, sanguini arterioso, incluso. Quæ duo acquisivere tantum virium; ob

This kind of aneurism is incurable, not in those cases alone where it is connected with internal parts, but also when, although occupying an external surface, it is of such extent, that no operation can be performed. Of this kind was the aneurism of a man, whose case I shall relate in few words.

John Doring, a native of Ireland, a soldier of the Perthshire Fencibles, was put on board a transport, and in walking carelessly, fell down the hatches into the hold. He lighted with his breech on the gudgeon of a swivel; and the shock was so great, that he lay insensible for half an hour. He had lighted exactly upon the tuberosity of the left ischium; the parts swelled, the swelling extended to the testicle, and for a long time he was in great distress. When he first observed a particular tumor, it was circumscribed, seated exactly upon the knob of the left ischium, pulsating, painful, and very distressing when he walked; but at first there was no swelling of the veins. The tumor, after some months of growth, was of a very extraordinary appearance. The skin of the buttock was thickened into a tumor, which, when handled, felt like dough; and the skin of the scrotum, thickened by the same process, mixed insensibly with the tumor. The veins of the hip, which we never see in their natural condition, were very singularly dilated; and the enlarged state of the veins extended very high upon the buttock. The

prohibitam transpirationem; et adstrictam, arteriarum spleneticarum, obstructionem: ut potuerint non modo elevare, sed movere satis commode grave, ac induratum lienis corpus."

"Virtus quippe unita multum potest. Exemplo sint, tonitru, tormenta bellica, castaneæ carbonibus impositæ. In quibus luce clarius apparet, quid valeat spiritus inclusus."

veins of the scrotum were also very singularly dilated, but there was no affection of the testicle itself. The parts were not in any degree painful when handled ; the tumor was distressing only when he was obliged to walk, but there was a general pulsation through the whole substance of the tumor. He was a very rude fellow, had gone into the army with no intention of serving. There was, indeed, no motive in such a case for proposing any operation ; but I was sensible that though there had, it would have been vain, he had other objects in view ! he would not be cured !

Among the cases in which a neglected tumor of this kind has grown to a very remarkable size, I hardly remember any one more particular than the following.

Janet Tarbet, about twenty-five years of age, a poor woman, who lived far in the north country, had a tumor of this kind growing for twelve years, for which she had suffered one partial operation, which was of course unsuccessful. She was sensible of no cause to which this tumor might be ascribed ; she was, indeed, in the lowest condition of life, and employed in the coarsest country work, but certainly received no blow. About twelve years before I saw her, she first perceived upon the outside of the knee, not a tumor, but a spot or mark, flat, and of a purple colour, smooth as the rest of the skin, not painful in the slightest degree ; it grew very slowly, and for a long time resembled one of those blue marks which are born with children ; it became more and more livid as it increased in size ; and though void of pain in general, it was painful when struck by accident,

as against the corner of a chair, and the pulsating pain continued for a quarter of an hour. She was a reaper in two harvests, after this formidable tumor began ; it was only after the labours of the second harvest, that she was sensible of the increase of the tumor. During the first harvest it increased slowly, but the labours of the second harvest excited the tumor so much that it grew in a short time to the size of an egg.

Her condition before the first operation was performed (which was in the third year of the disease) was very singular. She had been all her life a poor, laborious creature, alternately spinning night and day, or working at the heaviest country work. When at any time she chanced, in working, to strike her knee against any thing, the tumor was excited, and began to rise and to beat very strongly ; even the motion of the leg in spinning made it swell. When she went to any violent labour, the tumor puffed up ; it beat very strongly, and felt, she says, “as if it was a heart, or, as some living thing had been in it :” at such times she was obliged to lay herself down upon the bed ; and after a quarter of an hour of quiet, the beating ceased, and the pain went off, for there was much pain when this beating began.

She was often a week without pain ; at other times the pain and beating returned daily, or frequently during the day, according to the work she had to do ; but the tumor was always singularly affected by the return of her courses. During the first fortnight after the menstrual evacuation, the tumor continued very low and flaccid ; the second fortnight it became full, and even turgid ; then it began to pulsate, and

in the week preceding menstruation there was a turgescence and strong pulsation, which ceased the day the courses disappeared. During a long period her menstruation was profuse, and there were also terrible hæmorrhages from the tumor. These hæmorrhages were more frequent at the approach of menstruation ; they happened from the slightest accident, which broke the surface of the tumor ; she was used to command the torrent of blood, by bandaging the tumor very firmly, or, as she expressed it, by “hanking the part very hard with cloths or handkerchiefs.” After each hæmorrhagy, whether from menstruation or from a blow, the tumor, which was livid and soft, healed up with a sort of scab ; and after every loss of blood, whether by menstruation or by direct hæmorrhage, she was reduced to a very low ebb ; and the tumor itself, which had been very blue, tense, and pulsating strongly, became pale and flaccid, and hung quite pendulous, as if it were a mere bag just emptied of its blood.

This is the whole description of the disease, which became in the third year of its growth the subject of an operation. It was flat and livid at first ; it soon began to bulge out, to throb, and to bleed ; it had grown by successive impulses to the size of an egg ; it was only after the labours of the second harvest that it began to be very prominent in the time of its turgescence, or to be flaccid and bag-like when it was emptied of blood.

The pain, want of sleep, and inability to work, the frequent hæmorrhages, and the destruction of her health, and the pulsation of the tumor, when heated in bed, harassing her mind, inclined her to

call the surgeon, who ventured to strike a lancet into the tumor as a test of its nature ; the blood instantly spouted out, as if he had opened a vein ; it was closed with a compress of lint and a bandage. The next day the operation was performed ; the tumor was extirpated, and a number of small arteries were tied.

After the operation she fell very low, became sick, feverish, and at last delirious ; and when she recovered her senses, the tumor was manifestly increasing again, so that at the end of six weeks it was proposed to operate a second time, in order to cut out some small remains of the tumor ; but she was now restored to her senses, found herself easy, saw no danger in the tumor, and absolutely refused to submit to another incision. For seven years she had continued wonderfully well, some remains only of the tumor appeared ; the lower part of it hung down pendulous, like the auricle of the heart, and was more or less turgid, according to the state of her health, or of her menstruation, the season of the year, or the labours she engaged in ; but she was hale and strong, and said she could match herself with any young person at work, and at all kinds of work.

In the ninth year of this disease the little pendulous flap began to grow again ; it began to be affected by labour and menstruation, and upon the slightest accident it bled as at first ; the pulsation became more perceptible at each menstruation, and at each menstruation the tumor received an increase of size. By the tenth year it was enlarged to the size of a twopenny loaf, and beat very violently ; but it was only in the beginning of the eleventh year that it

burst out again. This happened to her one evening when she was abroad at work. In a moment her stocking and shoe were filled with blood. Since the time of the operation (for eight years) she had worn a bandage, which she found necessary, both to repress the pulsation, and to moderate the pain ; without it, indeed, she could not walk even the length of the door. This bandage did not resist the hæmorrhagy ! she undid the bandage, crawled home, and applying cloths, and hanking it very hard, she at last suppressed the hæmorrhagy.

From this time the bleedings became frequent and irresistible. Often while she was, as she expresses it, “hanking it with the bandages,” the blood worked up among her fingers ; and when she clasped it firmly with her hands, she felt the strong throbbing which caused it to bleed. She was always alarmed before the bleeding, with the tension, heat, and throbbing of the tumor. It burst out regularly every six weeks. For a year past it has displaced the menses, has ruined her health, and reduced her, I perceive, to extreme weakness.

Such is the faithful history of the disease, for which this woman is now to suffer a second operation. But there remains one circumstance to be told, of the most extraordinary nature. The tumor, which a few days ago was full, and of the size of a man’s head, now hangs pendulous, in the form of a thick and fleshy bag, very thick and solid, but perfectly pendulous, livid on its surface, flaccid, and without pulsation, and with large scabs on the places from which the blood was used to flow. As she was travelling up to town, the tumor burst, and three choppins of a clear

fluid were discharged in an instant from this tumor ! which never before discharged any thing but blood.

The tumor was extirpated by a surgeon in this city, very dexterously, with two long strokes of the knife, which went quite round the root of the tumor ; and dreadful as the hæmorrhagies had been, and although the incisions by which it was cut off were fully six inches long, not one drop of blood flowed ; and after the tourniquet was entirely slackened, nothing that we could contrive could excite even the slightest hæmorrhagy. The incision was made pretty wide from the root of the tumor ; one small artery only was tied ; the patient did not lose even six ounces of blood.

We must take a particular interest in this disease ; for such a tumor, so large, so livid, so foul and scabby, bleeding furiously, and returning after an imperfect operation ! is but too apt to be called a cancer, and the patient to be condemned to a lingering death, imbibtered by continual alarms. Concerning the nature of this woman's disease, I believe you will have no difficulties ; but this last accident, the discharge of a pure coagulable serum, and in such prodigious quantity, requires explanation.

Let me observe, that tumors of various kinds, and especially cancerous tumors, often produce an enlargement of all the adjacent veins ; and were I now delivering a history of tumors (and I wish I were) I should describe to you a variety of causes from which such varicose dilatations and profuse hæmorrhagies arise. But I am delivering only a history of aneurisms, and have but to prove to you that this is no such hæmorrhagy.

Had this woman's disease begun with a serous tumor, surrounded by such dilated veins, the tumor, before it could have produced such enlarged veins, must have been itself very large; and while the transparent part of such tumor had been conspicuous, the veins must have been very small, the colour natural, the bleeding slight, and easily repressed; and the turgescence of the tumor would have been accompanied with no sense of heat, with no sense of pulsation, much less with any actual pulse. On the contrary, this disease began not as a tumor, but as a flat livid spot; it rose very slowly from the surface; was soft, red, and of course vascular; it was distinguished even at the beginning from any bag of serum; its first bleedings were very violent, and were preceded by distinct pulsation. How could the surgeon have punctured the tumor without seeing this serum? He struck his lancet into it, and nothing but pure blood flowed; he extirpated the tumor, and still saw nothing but a bag of blood.

Had one of the bursæ mucosæ of the knee joint been thus enlarged; had the common cellular substance been formed into a serous tumor (which is a rare accident); had such serous tumor been the original disease; had this serous tumor enlarged by its growth the concomitant veins; and finally, had such complicated tumor burst again and again every six weeks; the serous part of the tumor must have been perceived; the serous part of the discharge must have been recognised and distinguished from the blood. But of the hundreds of times at which it bled, no serum appeared; and behold, at its last bursting, it poured out all at once three pounds of serum, with-

out one drop of blood. How can this be explained? How could so great an aneurism pour out serum instead of blood?

Let it be remembered, that when the surgeon first extirpated this tumor, after it had arrived at the size of a turkey's egg, he found in the centre of it a small cavity, no larger than was sufficient to contain a walnut; and it was filled with a firm coagulum of blood. Let it next be observed, that in a tumor growing to this great size, much of its bulk will, in the progress of the disease, consist of various sacs. There must be in such a tumor large cellular cavities, as well as dilated veins.

Let it be remembered, too, that the hæmorrhagy had, about five weeks before the operation, been exceedingly profuse; that the whole tumor was flaccid when she set out upon her journey; that the riding in an uncovered cart gave her terrible pain, and that the basis of the tumor was highly inflamed; it may then easily be imagined how those small arteries, which were wont to discharge blood, had secreted a sort of serum, just as the menstrual discharge, which consists of blood alone, commences and closes with a very profuse serous discharge. Let it be considered, on the other hand, how the vessels of the stomach, of the bowels, of the kidneys, of the throat, of the nostrils, and even of the common surface of the body, are so dilated, as to discharge, instead of the common exsudation or transpiration, pure and entire blood; which blood is poured out by anastomosis (as the ancients called it), i. e. by the open extremities of the vessels, and not from any breach of surface,

This tumor being dissected, is found to contain one

large cavity, and some very small sacs, of the size of peas or gooseberries, as if they were incipient sacs like the great one. That these vesicles were generated by the vessels which form this tumor, is certain, from their being buried in the most solid parts of the tumor. Yet none of the tumor can be said to be solid ; it is all of a singularly spongy texture ; the extreme vessels ramify through it in a most singular manner, so as to form a cellular substance ; and from these extreme vessels, as it appears to me, the blood had been poured out, like a sort of menstrual discharge.

Yet even my own senses could hardly have convinced me that this was a mere aneurism of the kind which I have described ! Although I had seen this kind of aneurism in various gradations, so as to be assured (from the case, for example, of Jean Smith) that it might grow to an unlimited size, yet I had myself a degree of doubt ; I waited anxiously for the report of the country surgeon ; and, that I might have an unprejudiced report from him of the nature of this tumor, I was careful to conceal my own opinion of the case. I mentioned the woman's disease as one which we apprehended might be a cancer, and begged to have the history of the first operation ; and Mr. Adams, the surgeon, in his letter to me, describes the disease in those very terms which I have chosen as characteristic of this kind of aneurism. His letter is as follows :—" Sir, Being from home on Sunday, I received your letter only last night, very late ; and I fear, now that I do answer it, my information will be but little satisfactory to you or the gentlemen who have interested themselves about this woman.

Whatever I remember concerning her I will mention with pleasure ; but to answer all your questions, is, I fear, impossible, considering the lapse of time since the operation was performed, and that I took no notes of the case.

“ It was about nine years ago that this woman first applied to me, when the tumor on the knee was about the size of a turkey’s egg. That part which projected above the surface of the thigh was hemispherical, with one or two small protuberances on the top, and one of these had a scab upon it, from which point it bled freely, when disturbed by any accidental cause. By these occasional hæmorrhagies she was much reduced ; but for the quantities of blood she lost, or the time this disease had continued, I must refer you to her own report. The whole tumor was of a natural colour towards the base ; the protuberance was livid, and the most prominent parts were of a high red colour.

“ In the course of a week or two after I saw her, the operation was performed in presence of Dr. Key. During the incisions, a number of small arteries started, but two only required to be tied. She lost little more than four or five ounces of blood.

“ The tumor adhered very firmly to the flesh of the thigh. The whole was supposed to be extirpated, yet such was the adhesion of this tumor to the muscles, that it is not impossible some small portion might have eluded the knife.

“ On examining the tumor after extirpation, there was a distinct sac in the centre, which might contain a small walnut ; it was filled with a hard substance resembling clotted blood. The sides of the tumor

had a glandular appearance, replete with small blood vessels, thick towards the base, and gradually thin towards the top*.

“ For a few dressings, escharotics were applied, the wound soon assumed a healing appearance, and, in the course of a few weeks, healed up. Neither Dr. Key nor myself supposed it cancerous at that time. The girl could give no distinct account of its duration ; but we thought, from its appearance, that it must have been years a-growing.

“ From the time of this operation I knew nothing of her condition till lately, when I was much astonished with the magnitude and other circumstances of the tumor. She was very poor, and had not a friend on earth to care for her : it was for this reason I advised her to go to the Edinburgh Infirmary, to have this second operation performed. I remain, &c.

“ JOHN ADAM.”

* I cannot help remarking here how very correctly the descriptions of surgeons, who had no knowledge of this theory, correspond with the account which I have given above of the nature of this tumor. Mr. Hill, surgeon in Dumfries, having extirpated a tumor of this kind from the eyelid of a child, but with too small an incision, had actually left a considerable part of it behind, and was employed in cutting off the remaining diseased vessels with a seton. After the dressings had fallen off, he says, “ I had then an opportunity of viewing circumstances more deliberately, and was sorry to see, that though the incision was begun within a strawbreadth of the eyelash, yet part of the tumor, which was within the socket, was left behind. In this, the large red arteries and blue veins made a very singular appearance, resembling net-work in a kind of whitish transparent jelly. As I durst not attempt any more cutting, two threads of cotton were drawn in by a crooked needle below the bottom of that part of the tumor which remained, and were left as a seton-cord to consume it gradually. Red precipitate and burnt alum were tried separately with the same view ; but they gave so much pain, that the infant could bear neither of them. The cord, however, in a few weeks cut its way through, and destroyed the remainder of the tumor so fully, that slight dressings soon completed the cure.”

Let me now mention to you the chief circumstances of a very remarkable case, related by Dessault ; you will perceive in it many analogies, which will explain, in some degree, the difficulties of this case : you will perceive, that a pulsating aneurism of this kind may, by being irritated and inflamed, be brought into such a condition, as to pour out serum only instead of blood.

“ Anne Vachot was born with a small excrescence under the chin, of the size of a small strawberry, but without heat, pain, or any change of colour in the skin. As it did not increase in proportion to the growth of the child, it attracted little attention ; from infancy till the fifteenth year of her age there was little change ; but, from the period in which the menses appeared, it increased all at once. It was remarkably elongated, to double its size, and there distilled from the point of it a very florid blood ; the hæmorrhagy became periodical, and so excessive, as to produce an alarming degree of weakness ; while a periodical headach, and a slight giddiness, preceded each return. But there was not, about this period, any change on the tumor, except a very sensible heat, and a slight enlargement of some small cutaneous veins.

“ The influence of this hæmorrhagy upon her system was distinctly marked ; the menses became irregular and sparing, and the breasts hardly unfolded themselves when she had considerably passed the usual age.

“ She was twenty-four years of age, when she was received into the Hôtel Dieu of Lyons. This was no longer a slight deformity, but a serious disease ;

in the course of the three last years, the tumor had acquired three times its original size ; it resembled a middle-sized pear, adhering by its basis to the chin ; the heat was continual, and the expansive pulsation was felt at every point of the tumor, but especially at the apex (the only point where the skin was become red, tender, and shining) ; there the pulsation was particularly felt, while the pulsation was deep and heavy towards the basis of the tumor.

“ None of the arteries, subclavian, carotid, nor maxillary, had suffered the slightest change ; there was no fluctuation in the tumor, nor could you make the slightest impression upon it by pressing with your hand ; but you could distinguish with the finger some inequalities and hardnesses under the skin, like small lymphatic glands.

“ However difficult it might be to suppose an aneurism in a place where the arteries were so small, yet the strong pulsation of this tumor, and its frequent hæmorrhagies, gave reason to suspect, if not an actual extravasation of blood, at least a remarkable dilatation of the vessels which supplied the tumor. It was manifestly more prudent to use the ligature for the extirpation of this tumor than the knife.

“ The ligature was applied the tenth day after her arrival in the hospital ; the stricture was but slight ; the tumor became painful, inflated, and very red ; the scarf-skin separated from it, and there was a remarkable effusion of a serous fluid ; the pulsations at first increased in violence, and continued such as to give the patient great distress, while the serous effusion continued equally profuse till the fourth day.

“ On the fifth day there happened, in consequence of a small crack in the upper part of the tumor, a considerable hæmorrhagy. The blood stopped, indeed, but the patient was weakened ; obscure pulsations were still felt in the tumor ; the serous discharge continued ; the phlictenæ and points which discharged the serosity, began to whiten and suppurate ; the ligature was tightened from time to time, and when the tumor seemed quite deadened, and hanging by a pedicule, it was cut off with a knife, discharging only a few drops of blood.”

These gentlemen found it difficult to conceive this to be an aneurism, because the only aneurism they could imagine was the dilatation of some single arterial tube, what is commonly called a True Aneurism ! But the singular size of this tumor, and the extreme smallness of the maxillary arteries, the vast disproportion betwixt such an aneurism and any individual artery, forbad such a conclusion.

It is to be observed, that this being an aneurism from anastomosis, its arteries were small but wonderfully active ; they were excited in paroxysms ; they took upon themselves the function of menstruation ; and puberty had hardly appeared, and menstruation begun, before these vessels increased to a great size, or poured out so much blood as to supersede the menstrual flux.

It is next to be remarked, that while this set of active arteries were thus periodically excited, they were also capable of being excited by any occasional irritation ; and thus their high action, quick pulsations, and occasional hæmorrhagies, marked the nature of the disease. When the ligature was put round this

tumor, which it could not entirely compress, one part defending another, those central parts which were not compressed were irritated ; a deep, incessant, and painful throbbing came on, and lasted for five days ; and during that time, the serous discharge took the place of that effusion of pure blood which was wont to flow in the uninflamed state of the tumor. A new secretion took place, like that which, even in its most natural state, ushers in and closes each menstruation.

All the other analogies of the case, I will leave to your own ingenuity ; you easily foresee how, in such aneurisms, various sacs will be formed, and how they may be replenished with other secretions besides blood. One part only of Dessault's report, I must not neglect to state to you. " The tumor being opened, presented a white cellular texture, firm, lardy (*comme couenneux*), interspersed with numerous blood vessels, which seemed to be profusely scattered under the skin."

Of such tumors arising spontaneously in adult years, I find hardly any recorded. There is, indeed, one case related by Mekren, which I shall mention as a warning to the young surgeon not to meddle rashly with any tumor till he have thoroughly reflected on its nature, nor even to puncture tumors, however trivial, which have any degree of pulsation, or which contain blood.

" Maria de Waart, younger daughter to a senator of Amsterdam, was relieved from chronic pains of the head, ears, and teeth, by the forming of a whitish tumor on the palate, of the size of a walnut. Both physicians and surgeons believed it to be a small abscess ; at our instance (says Mekren) the patient

submitted to the operation; the tumor was opened with the lancet, when, instead of pus, pure and florid blood flowed in great profusion, which we were obliged to repress with permanent compression of the finger.

“ In five or six days more, we opened the tumor again, which was now greatly enlarged, and unquestionably contained pus; so, at least, we believed!— But no sooner was the incision made, than the hot blood issued with such impetuosity, that we were obliged to suppress the hæmorrhagy by thrusting lint into the wound.

“ Seeing these attempts had been thus unsuccessful, it was thought by no means prudent to open such tumor again, but to endeavour, by time and applications, to convert the blood into pus. To this effect, we ordered a decoction of marsh-mallows, althea, lintseed, figs, &c. sweetened with syrup of althea, to be held warm in the mouth. By such gargarisms, we daily observe tumors of this kind discussed, but this one was not cicatrized without a previous exfoliation of the palate*.”

The nature of this tumor is very manifest: let it be a warning to the young surgeon, who sometimes finds himself thus unawares engaged with an enemy he does not expect. This must have been a small aneurism by anastomosis, which had been so long neglected, as to have spoiled the bone. Mekren congratulates himself on having recollected that hole, described by Schultetus, through which arteries and veins pass down to the palate from the nose†.

* Mekren, page 267.

† Curatione sic insperata absoluta nostrum credidimus esse, unde collectio sanguinea dicto loco se exhibens proveniret cognoscere:

Whether some history of such a tumor arising spontaneously, and in an adult person, may not lurk in some odd corner of an old book, I do not know. I have a suspicion that it is the disease mentioned by Mr. Pearson, of the Lock Hospital*. Mr. Pearson ingenuously confesses himself at a loss to ascertain the nature of the disease; for me to pretend to explain it, were nothing less than presumption. But the case related by the late Mr. Else, of John Callahan, a mariner, who fell upon an anchor stock, had surely been an aneurism of this nature†.

Except these two cases, which I rather suspect than believe to have been aneurisms from anastomosis, all the cases related by authors have been either of purple and bleeding spots, which were perceived at the time of birth, or have been cases so irregular and dangerous, and so little understood, that they have been thrown into the common chaos of indescribable and incurable diseases; they have been called anomalous cases, or bloody tumors. But every bloody tumor must have a cause; must proceed from a wound; a bruise; an enlargement of one or more vessels; it is surely, then, our duty to inquire carefully into every such disease.

Of those purple and bleeding spots or deformities, and of the spontaneous aneurism from anastomosis, the nature and internal structure is unquestionably the same; but the nature of the one is obvious at first sight; the history of the other requires a serious

Nullus hic occurrit qui vel verbis vel scriptis vias commodus indicare potuit. Aliquid lucis huic difficultati adferunt quæ ob. 24. Armament. Chirurg. proponit Joan. Scultetus medicus et chirurgus Ulmensis dictum hic describit circa dentes molares a pallato ad nares extensum, in quo vena atque arteria commodæ tunicæ inclusæ detinentur, &c.—MEKREN.

* Vide Medical Communications of London, vol. II.

† Vide Medical Observations and Inquiries, vol. III. p. 170.

and diligent investigation. Those purple spots, especially if soft, hollow, and not upon the surface, but within the substance of the skin, are never without danger; they should be cut out early, both as they are growing deformities, and as tumors which may eventually come to such a size as to injure the health by repeated hæmorrhages, or even to prove fatal by bursting out during the night. Frequently we have no choice; they are sometimes seated upon the lips, and protrude (as in the case related by Severinus) so much, as to prevent the child sucking. The more protuberant of those tumors may be cut off by a ligature; those which are flatter, though protuberant, have yet a broader base, and may be killed by striking a needle through the base of the tumor, and tying the threads of the ligature on either side. The surest way is the knife; for, in using the knife, you know when you have extirpated the tumor, and you bring the lips of your incision to approach so as to leave little mark.

But the aneurism which I have been describing, though it differs from these connate aneurisms in no essential point, arises, you perceive, either spontaneously or from a blow. The disease may form in any part of the body. I should have named it cutaneous aneurism, but that it occupies all parts of the body, the viscera as well as the skin. Its colour, pulsation, and frequent bleedings, are sure marks of the disease; and whether large or small, the tumor is still of the same nature. It is a congeries of active vessels, communicating sometimes with cellular substance only, sometimes with larger cells, and sometimes forming remarkable sacs in the centre of the tumor. This aneurism is a mere congeries of active vessels, and will not be cured by opening it; all attempts at obli-

terating it with caustics, after a simple incision, have proved unsuccessful ; nor does the interrupting of particular vessels which lead to it affect the tumor : the whole group of vessels must be extirpated. In varicose veins, or in aneurisms of individual arteries, or in extravasation of blood, such as that produced under the scalp from blows upon the branches of the temporal artery, or in those aneurisms produced in schoolboys by pulling the hair (and also in those bloody effusions from blows on the head, which have a distinct pulsation), the process of cutting up the varix, aneurism, or extravasation, enables you to obliterate the vessel, and perform an easy cure. But in this enlargement of innumerable small vessels, in this aneurism by anastomosis, the rule is “ *not to cut into it, but cut it out.*” These purple and ill-looking tumors, because they are large, beating, painful, covered with scabs, and bleeding like a cancer in the last stage of ulceration, have been but too often pronounced cancers ! incurable, bleeding cancers ! and the remarks which I have made, while they tend in some means to explain the nature and consequences of this disease, will remind you of various unhappy cases, where either partial incisions only have been practised, or the patient left entirely to his fate.

COMMENTARY ON THE TUMORS DESCRIBED BY MY
BROTHER AS ANEURISM BY ANASTOMOSIS.

The practical surgeon will have four distinct tumors to recognise in practice. 1st, The bleeding venous tumors of children ; 2d, the tumor here described as occurring in the adult ; 3d, the fungus hæmatodes ; and, 4th, the false aneurism.

Mistakes have been entertained in regard to the tumor called *fungus hæmatodes*, from the consequences of its encroachment on the veins or arteries not having been noticed, and consequently the connexion of parts not understood. This fungous tumor has no sac, nor investment of cellular membrane, to separate it from the surrounding parts. It incorporates itself with whatever it touches, destroys it, and converts it into its own nature. If it be a membrane, the fungus projects through it; if it be a vein, it opens into it; if it be an artery, the coats are equally destroyed: I have seen a portion of the fungus projecting into the aorta.

The consequence of the tumor thus opening into the blood vessels is, that the blood is admitted into the cellular texture of the original tumor, which sometimes bursts, and bleeds; and very often, on dissecting the tumor after death, the coagulum of extravasated blood is interspersed in the original texture of the tumor.

These circumstances, in my opinion, explain what has been described as the consequence of a *bursten vein*, where, on dissection, the surgeon's probe has passed without resistance from the vein into the substance of the tumor. It is this same occurrence which gives rise to such confusion of parts; and thus the fungus hæmatodes is sometimes described as an aneurism by anastomosis, sometimes as a false aneurism, and often as an anomalous tumor, of which nothing at all could be made, on examination after death, but a confused admixture of brain-like matter and coagulated blood.

END OF VOL. III.



